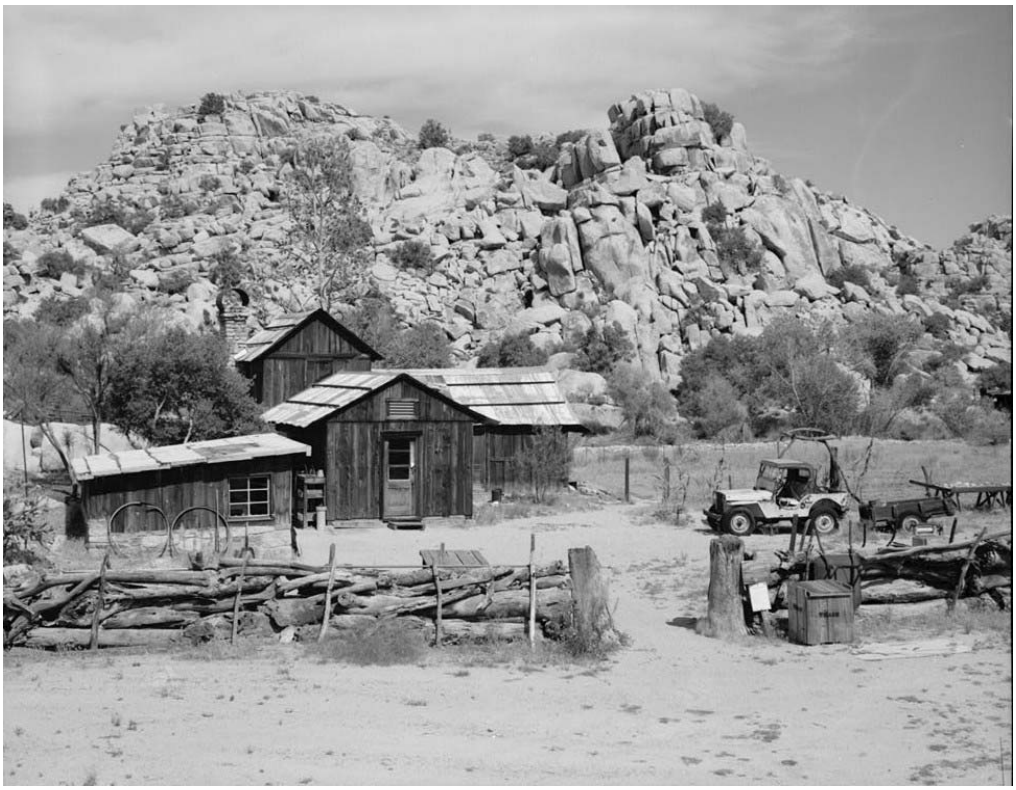
Joshua Tree

National Park Service
U.S. Department of the Interior

Joshua Tree National Park

Keys Ranch Comprehensive Plan
Environmental Assessment



September 2005

Joshua Tree National Park
74485 National Park Drive
Twentynine Palms, California 92277-3597

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Executive Summary

The Keys Ranch Historic District, listed on the National Register of Historic Places in 1975, is locally significant for its associations with ranching and industry (mining operations) in the Mojave Desert, and for its associations with prospector and rancher William F. Keys. The District consists of three primary areas within Joshua Tree National Park. They include the Keys Ranch (Desert Queen Ranch), Cow Camp and Barker Dam. The period of significance is from 1894 when Keys began living at the ranch to the year he constructed the last major infrastructure improvements.

Because numerous attempts at planning for the future of the Keys Ranch have resulted in a disjointed series of unfinished plans (Pepito 1997, Spearing 1999, McCutcheon 2001), proposed recommendations (Greene 1983, NPS 1995, NPS 2001) and site planning priorities (NPS 1990, NPS 2001b, NPS 2005a) for the Keys Ranch Historic District, Joshua Tree National Park has undertaken a comprehensive management planning effort to fulfill cultural resources mandates by securing the future of the Keys Ranch Historic District within the park.

This comprehensive plan attempts to address the numerous issues associated with the management of Keys Ranch that were raised by the park planning team, the public and other federal and state agencies and organizations during the planning process.

This plan/Environmental Assessment identifies five alternative visions for the future management of this National Register property. These alternatives are derived from the initial direction provided in the Joshua Tree National Park General Management Plan/Development Concept Plans Environmental Impact Statement (NPS 1995), from interdisciplinary team, public, agency and organization comments and from other planning documents, most notably the Cultural Landscape Inventory for the Keys Ranch Historic District (NPS 2004), and include:

Alternative 1: No Action (Continue Current Management: Non-Systematic Protection of Keys Ranch)
This alternative would continue to protect Keys Ranch resources on a case- by- case basis, as time and funding permit and/or as needed.

Alternative 2: Minimum (Systematic, Prioritized Protection of Keys Ranch Resources)
Through a series of systematic, prioritized preservation maintenance actions, this alternative would enhance visitor safety and protection of Keys Ranch resources listed on the National Register of Historic Places.

Alternative 3: Moderate Inward Focus (Enhanced Prioritized Protection and Selective Restoration of Keys Ranch Resources and Multi-Faceted Interpretive Programming) [Preferred]
In addition to the actions called for by Alternative 2, this Alternative would provide visitors with multiple interpretive opportunities to experience firsthand these historic resources (including helping to facilitate their protection through community historic preservation workshops).

Alternative 4: Moderate Outward Focus (Enhanced Prioritized Protection and Selective Restoration of Keys Ranch Resources with Increased Opportunities to Understand Ranch Resources within the Context of the Desert Homesteading Experience)
In addition to the actions called for by Alternative 2, this alternative would enhance the historic setting of the Keys Ranch and provide visitors with opportunities for heightened understanding of the relationship of the ranch to other park resources, desert homesteading in local communities and the modern expansion/current context of desert living.

Alternative 5: Maximum (Enhanced Prioritized Protection and Widespread Restoration of Keys Ranch Resources coupled with Multiple Interpretive Opportunities for Connecting the Keys Ranch Experience to Other Park Resources and Communities beyond the Park)
In addition to the actions called for by Alternative 2, this Alternative would restore the historic setting and a working landscape to the Keys Ranch that would be supported by the park and community. Visitors would have greatly enhanced understanding and experience of Keys Ranch Resources.

Although each of the action alternatives contains the same basic preservation strategy for cultural resources listed on the National Register of Historic Places, they differ in what would be accomplished by going the next step in management of the resource as a whole and in how visitors would experience that resource.

Within this document, these actions and their impacts are described in relationship to the current management of Keys Ranch. This analysis describes the environmental (natural, cultural and recreational) consequences of implementing the proposed alternatives.

Following public comment on this document, the park interdisciplinary planning team will recommend one of these alternatives or a combination of actions from them for selection by Joshua Tree National Park Superintendent, Curt Sauer and National Park Service Pacific West Regional Director, Jonathan Jarvis as the guiding management strategy for the future of the Keys Ranch Historic District.

Introduction

This Environmental Assessment has been prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) of 1969 as amended, including the Council on Environmental Quality (CEQ) regulations found at 40 CFR 1500 *et seq*. This Environmental Assessment also facilitates compliance with National Park Service policy and a variety of other federal laws, including Section 106 of the National Historic Preservation Act, Section 7 of the Endangered Species Act, and the Wilderness Act, and other laws enacted for the protection of the environment.

NEPA requires the documentation and evaluation of potential impacts resulting from federal actions on lands under federal jurisdiction. An Environmental Assessment discloses the potential environmental consequences of implementing the proposed action and other reasonable and feasible alternatives. NEPA is intended to provide decision- makers with sound knowledge of the environmental consequences of the alternatives available to them. In this case, the superintendent of Joshua Tree National Park and the Pacific West Regional Director are faced with a decision regarding how to facilitate future use and preservation of Keys Ranch.

Project Setting

The Keys Ranch Historic District is located near the Joshua Tree National Park west (Joshua Tree) entrance in Hidden Valley. The ranch is immediately west of the northernmost area designated as wilderness within the park. The Historic District straddles two townships: the Desert Queen Ranch and Cow Camp are in Township 1, Section 32 within San Bernardino County, and the Barker Dam is to the south in Township 2, Section 4 within Riverside County (NPS 2004). Keys Ranch is located, at an elevation of 4, 200 feet, in a tributary valley to the Lost Horse Valley between the 'Land of Rocks' and the Little San Bernardino Mountains (Chappell *et al.* 1974 in Spearing 1999).

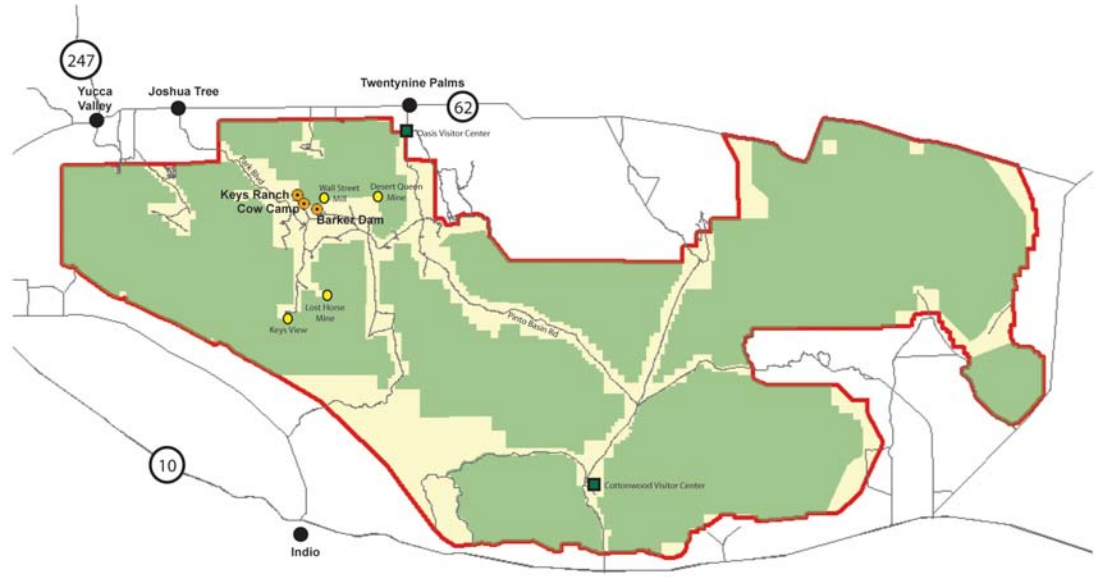
NPS 2004 further described the site:

> The Keys Ranch Historic District is located along the interface between the southwestern edge of the Wonderland of Rocks; a massive jumble of granitic landforms, and Hidden Valley; a broad, flat alluvial valley. The canyons that are created by this interface vary in height; often as high as a hundred feet. The Desert Queen Ranch, Cow Camp and Barker Dam are all located in these canyons that extend out into Hidden Valley. The heads of these canyons are typically narrow, but quickly broaden out into alluvial flats. The water impoundments on the ranch are located up the canyons at points where gaps between the boulder walls were easily bridged to create water impoundments. At these points, the canyon floors jump in elevation due to the heights of the dams and have significant changes in vegetation behind them. The steep canyon walls also created natural boundaries, for the cattle, that were typically augmented by some type of fencing to keep the cattle penned in or out, depending upon the need.
>
> The canyon and valley floors are crossed by intermittent streams that emerge from the Wonderland of Rocks. Trees and dense vegetation are located along some streams and springs that provide water throughout portions of the year. Adjacent to these seasonal streams, settlements were established, animals grazed and watered and crops were grown.

History of Keys Ranch: (see Appendix 3: Timeline)

Figure 1

Keys Ranch Historic District and Related Sites



Legend

- Keys Ranch Historic District Sites
- Other Sites Associated with Keys Ranch
- Park Visitor Centers
- Local Communities
- Wilderness
- Park Boundary

N
W
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10 5 0 10 Miles

National Park Service, Pacific West Region
September 2005

Park Purpose and Significance

Joshua Tree National Park occupies 794,000 acres of the Mojave and Colorado Deserts of Southern California, approximately 140 miles east of Los Angeles. The park lies along the east-west transverse ranges in the Little San Bernardino Mountains. The southern boundary of the park follows the base of these mountains along the northern perimeter of the Coachella Valley while the Morongo Basin defines the north boundary. The park and Keys Ranch lie in both San Bernardino and Riverside counties. It is accessible from the south via Interstate 10, and from the north via Highway 62 (Figure 1).

Joshua Tree National Monument was established on August 10, 1936 (Presidential Proclamation No. 2193) because its "lands contain historic and prehistoric structures and have situated thereon various objects of historic and scientific interest. . ." In 1950, Public Law 81- 837 (64 Stat. 1033) reduced the size of the park by removing almost 300,000 acres known to contain significant mineral reserves. On October 31, 1994, the monument was expanded by the California Desert Protection Act (Public Law 103- 433). This Act of Congress added 234,000 acres to the park and renamed it Joshua Tree National Park to ". . . preserve unrivaled scenic, geologic and wildlife values. . .unique natural landscapes. . . protect and preserve historical and cultural values . . . and diverse ecosystems of the California Desert" (General Management Plan 1995).

Of the park's 794,000 acres, 593,490 acres are legislated wilderness – set aside for the preservation of natural, cultural, historic, and scenic resources. In the park, the compressed transition zone, between the Mojave and Colorado Deserts, makes it possible to cross from one desert to the other within less than 65 miles. The park contains all or portions of numerous mountain ranges including the San Bernardino, Cottonwood, Hexie, Pinto, Coxcomb and Eagle ranges. Elevations in the park range from 536 to 5,814 feet. Major valleys include the Pinto Basin, Juniper Flats, Covington Flats, Pleasant, Queen, and Lost Horse (General Management Plan 1995). The park boasts over 700 native plant species, 40 reptiles, 41 mammals, and 240 bird species. Over 26 species of special concern are found in the park, with one – the Mojave desert tortoise, federally listed as threatened; two – the Coachella Valley milk vetch and Little San Bernardino Mountains Gilia, federally listed as endangered; and one – the Flat- tailed Horned Lizard listed as federally proposed threatened.

In March 1984, a portion of the park was designated by the United Nations as part of the internationally recognized "Colorado and Mojave Deserts Biosphere Reserve." Other parks included in this 25 million acre biosphere reserve include: Death Valley National Park, Anza Borrego Desert State Park, Santa Rosa Mountains Wildlife Management Area and Deep Canyon Research Center. The purpose of the biosphere reserve system is to establish a network of protected examples of the world's major ecosystem types.

Park Purpose (General Management Plan 1995: 8)
According to the enabling, wilderness and national park legislation, as well as biosphere reserve statutes, the purposes of Joshua Tree National Park are to:

> Protect and interpret areas, sites, structures and various artifacts associated with occupation by prehistoric, historic and contemporary Native American groups, historic miners and subsistence cattle ranchers;
>
> Protect and interpret the biologically diverse Mojave and Colorado Desert ecosystems;
>
> Serve as a natural laboratory for understanding and managing the Mojave and Colorado Desert ecosystems;

Preserve the character and values of park wilderness; and

Provide visitors with opportunities to experience and enjoy natural and cultural resources through compatible recreational activities.

Park Significance

Cultural Resources Significance (General Management Plan 1995:9)

The park contains early Pinto culture sites and traces of other prehistoric and historic American Indian cultures, as well as those of Euro- American gold mining, homesteading and subsistence cattle ranching. The park is archeologically, ethnographically and historically diverse. It exhibits a continuum of cultural adaptations and includes a significant collection of prehistoric and historic American Indian artifacts and late 19th and early 20th century non- Indian artifacts. These artifacts document the park's importance to east- west migrations from prehistoric times. The remnants of past human occupations illustrate the adaptations that different groups made to the arid desert environment.

Natural Resources Significance (General Management Plan 1995:8- 9)

The park was originally set aside to preserve an ecologically dynamic area, the east- west Transverse Range in the California Desert, which creates an unusual compressed transition zone between the Mojave and Colorado Desert ecosystems. Early proponents of the park envisioned a representative segment of the two deserts that would be large enough to embrace a self-sustaining natural system.

Recreational Resources

Mountains, basins, canyons, massive boulders and rock outcrops and desert natural and cultural resources combine to comprise outstanding scenery. The massive boulders and rock outcrops provide some of the best rock climbing in the United States. More than 1.2 million visitors per year enjoy the park's diverse wildlife and vegetation and other natural and cultural resources.

I. PURPOSE AND NEED

Numerous attempts at planning for the future of the Keys Ranch in Joshua Tree National Park have resulted in a disjointed series of unfinished plans (Pepito 1997, Spearing 1999, McCutcheon 2001), proposed recommendations (Greene 1983, NPS 1995, NPS 2001) and site planning priorities (NPS 1990, NPS 2001b, NPS 2005a) for the Keys Ranch Historic District. As a result, a comprehensive management plan to identify and prioritize appropriate old and new recommendations based on the recently completed cultural landscape inventory (NPS 2004) and other applicable planning documents for the site is needed. The purpose of this environmental assessment is to evaluate alternative management strategies to guide better cultural and natural resources management and protection and park operations at Keys Ranch.

Planning Issues

Applicable issues include how to facilitate site preservation, including how historic structures should be stabilized and whether or how to reintroduce missing landscape features; how to facilitate public use; and how to resolve operational issues, such as implementation of cultural cyclic maintenance or rehabilitation recommendations, interpretation and site caretaking. A summary of issues that arose during planning for Keys Ranch follows:

Cultural Resources

Historic Buildings and Structures

- Keys Ranch Historic Structures have suffered under multiple cultural resources evaluations with differing conclusions about the significance of the ranch.
- Some important historic structures have been lost (Adobe Barn, McHaney Cabin); others may be lost without immediate actions to preserve historic fabric (Adobe Fireplace Ruin, Stamp Mill Ruins).
- While many historic structures have been documented (including through HABS and HARE), some ranch and mining resources have yet to be thoroughly investigated (proposed site of house, etc.).
- Cultural Landscape Inventory recommendations for structures on the National Register have been not been systematically or fully implemented.
- Administration of the site has resulted in the construction of non- historic buildings structures within the Historic District (including the parking area, vault toilet and caretaker's residence location). Other non- contributing temporary additions include: water tanks, table underneath motor, outhouse, and the burlap cooling/storage structure near the VIP site.

Landscape

- Some fruit trees from non- historic source genetic material have been replanted within the historic orchard; some have died.
- Planted fruit trees contain memorial plaques that do not conform to NPS policy.
- The Fire Management Plan does not contain a prescribed fire component.
- Historic vegetation has been lost; native and non- native vegetation is growing up through the objects and structures.
- The optimal level for maintenance of water in the reservoirs is unknown for orchard maintenance.

Objects

- The significance of the non- museum objects at the Keys Desert Queen Ranch needs to be evaluated so the park can prioritize their protection/preservation, deciding which are the most important to preserve and how to preserve them, and conversely which can be let go.

- Over time, many objects left at the ranch have been sorted, removed by park staff and family members, or stolen. Some of these may still be in nearby communities.
- Cultural resources managers cannot verify the correct historic locations of some equipment.

Oral History
- Keys' family members who lived at the ranch are still around and could provide additional oral histories about how the ranch was used.
- Community members who visited the Ranch during the Keys era or who knew the Keys family well may also be able to provide additional information.

Archeology
- The Keys Desert Queen Ranch and surrounding area contain multiple archeological sites distributed over time whose resources have not yet been fully documented.
- No report has yet been received on the detailed archeological test excavations conducted (1998) within the Keys Desert Queen Ranch.

Museum Collections
- A Museum Management Plan is available and contains recommendations for the Keys Desert Queen Ranch.
- Some objects still at the ranch have been accessioned into the museum collection, but are not being preserved and either need to be de- accessioned or moved into collections storage.

Natural Resources
- The park currently has one of the healthiest herds of desert bighorn sheep in California according to the California Department of Fish and Game's bighorn sheep expert. The health of this population may be attributed to the Keys Ranch reservoirs.
- Five sensitive plant species occur in the vicinity of the Keys Desert Queen Ranch (within the current administrative closure).
- The optimal level for maintenance of water in the reservoirs is unknown for wildlife.

Interpretation

Current Visitor Use
- During the peak season (winter- spring), the park currently conducts a limited number of fee demonstration/ tour fee- funded guided tours of the ranch.
- Approximately 19,000 school children per year are served through the curriculum- based education program offered at the ranch.
- The current public interpretive program is estimated to contact less than one percent of the park's visitors each year.
- To fulfill the intent of the Historic Sites Act and the California Desert Protection Act, more visitors should be offered the opportunity to learn about the Keys Desert Queen Ranch.

Telling the Keys Story
- The relationship of the Keys Desert Queen Ranch and other Keys Desert Queen ranch resources (both within and outside of the Historic District) throughout the park is minimally interpreted. Currently, the ranch site is the only portion of the Keys Ranch Historic District where interpretation of Key's story is focused.
- The story of Bill Keys' family members' lives (belief system, motivations, experience of desert life, and womens' lives on the ranch) is missing. Much of what is interpreted is based on the physical evidence of Keys' work.

- While self- guided tours have been considered, security of objects is a concern.
- Keys' family members who lived at the Ranch are still around and could provide additional oral histories about how the Ranch was used.
- Community members who visited the Ranch during the Keys era or who knew the Keys family well may also be able to provide additional information.

Park Operations

Administration

- The Keys Desert Queen Ranch interpretive program is not base- funded.
- Priorities for preservation/use of the site need to be integrated through all park divisions.
- The park does not have enough funding or staffing to preserve it all.
- Site caretakers need access to communications equipment, water, power and waste removal.
- The park has only consistently been able to secure a VIP presence for about 6 months of the year.
- Minimal partnerships exist within the community to manage the ranch – the park could expand on relationships with the Twentynine Palms Historical Society and the Desert Institute.

Fire Management

- Buildings, structures and other resources are vulnerable to structural and wildland fires.
- No structural fire plan exists for Keys Desert Queen Ranch resources.
- Vegetation management and other structural fire strategies are not employed at the Keys Desert Queen Ranch.
- Native American fire management practices are unknown.
- Structural or wildland firefighting resources are unavailable in close proximity to Keys Desert Queen Ranch. The Black Rock fire center has a 30- minute response time to the ranch.

Maintenance

- The park has not prioritized preservation of Keys Desert Queen Ranch resources
- There is no systematic preservation plan for Keys Desert Queen Ranch resources.
- The existing maintenance program is reactive rather than proactive.

Security

- An on- site caretaker or expanded interpretive program is needed to deter vandalism and theft of historic objects.
- The caretaker presence requires a radio antenna since handheld radios do not reliably work from the Keys Desert Queen Ranch.
- Caretakers are not officially authorized to contact intruders (due to potential threat), but often do.
- The current 117- acre administrative closure deters most unauthorized visitors.

Safety

- The five dams associated with the Historic District's three reservoirs are in poor condition.
- Staff members have Hantavirus concerns about structures with rodent infestations.
- Some staff has concerns about visitor interactions with the objects at the site, however, no safety incidents have been reported.
- Visitor safety issues at the Keys Desert Queen Ranch have been almost wholly related to heat tolerance.
- Hazardous materials may still be present at the machine shed and stamp mills.


Schoolhouse
Cars
Guest House
Jack House
Disney Shed
Girl's Outhouse
Chicken Coop
Shed
Main Ranch
Crane
Salvage Yard
Store house
Arrastra
One Stamp Mill
Orchard
Garden
Retaining Wall
Corral Adobe / Barn Ruin
Machine Shed
West House (McHaney Ruin)
Fences
Five Stamp Mill Ruin
Chilean Mill Ruin
Huntington Mill, Adobe Fireplace Ruin
Trailer Ruin
Rockshelter
Outhouses
Arched Dam
Keys Reservior
Dam Behind N. House
North House
Dam SE of N House
NPS Maintenance Shed
Schoolhouse
Wash
Caretaker's Res.
Parking Lot
Restrooms
Cemetary
N
W
E
S
Wash
Circulation
200 100 0 200 Feet
Keys Ranch
Source:Keys Ranch Historic District
Cultural Landscapes Inventory, 1999 (Revised 2004)

Public and Agency Scoping Comments

Scoping is the effort to involve agencies and the general public in determining the scope of issues to be addressed in the environmental document for a project or plan. Among other uses, information gathered during scoping enables the National Park Service to determine important issues (including those that may be eliminated from consideration) and to determine the breadth of the additional planning process. Scoping often provides an opportunity for early input by interested individuals, agencies and organizations.

To facilitate public involvement, a press release was issued on May 26, 2005 containing information about a public meeting to be held at Copper Mountain College in the town of Joshua Tree on June 8, 2005. The press release contained information about how agencies, organizations and individuals could participate in the planning process for the Keys Ranch and related resources.

In May 2005, letters announcing the public meeting and the beginning of the planning process were also sent to Native American Indian Tribes, the California State Historic Preservation Officer, the U.S. Fish and Wildlife Service, and Keys family members (see *Consultation and Coordination* section).

To facilitate public comments, a visitor comment form was available at the public meeting (see Appendix 4) and in the visitor center, as well as by request during the public scoping period (June 18 – July 17, 2005). At the public meeting, visitors were asked to comment on what they liked, didn't like, what they thought was missing; what expertise they might lend to the preservation of Keys Ranch; what issues they believed most important to its preservation; and to contribute any solutions to the problems presented.

As a result eight public (individual) letters, two organization letters (commercial and non- profit organization representatives) and one agency comment letter were received. In addition, another three people attended the public meeting in addition to the NPS staff members present.

Individual comments included:

- Continue to offer high quality ranger- guided tours (2 comments).
- Higher tour prices for continued operation of similar tours would be okay.
- Visitor center exhibits or self- guided tours would not offer the same experience as the ranger- guided tour.
- Liberal access could compromise the safety and security of the ranch.
- Preserve the ranch structures using weathered or used materials.
- Continue to provide a water source for desert animals.
- Consider rehabilitating springs that used to provide additional water.
- Preserve the Studebaker wagon, the corral fence, and the deteriorating house and orchard.
- Continue to increase attention and give higher preservation priority to Keys Ranch.
- Historic photos are available of the adobe barn.
- Highlight Keys' connections to Johnny Lang, John Samuelson and Death Valley Scotty.
- Restore the ability to walk into the Keys Ranch House.
- Restore all structures related to the Keys era.
- Provide a way to maintain the restoration.
- Involve the local community and state in restoration and maintenance.
- Involve historical societies and the park association to provide labor and money.
- Develop the Keys Ranch as a destination similar to Scotty's Castle in Death Valley.

- Develop partnerships with Copper Mountain College for grant writing, labor, education, etc.
- Provide easy access to the Keys Ranch through a trolley system, or horse drawn wagons. Involve the local horse community.
- Publicize the Keys Ranch story by increasing the number of articles, PowerPoint programs, internet site visits, and a play or musical based on Keys' life. Develop other marketing strategies.
- Restore equipment that is no longer used and which is unique to the area.
- Consider giving living history programs at the Ranch.
- Create a restoration catalog identifying the projects needed to preserve the Ranch in priority order for dissemination to local historical societies, experts and other groups interested in funding or facilitating the preservation of the Ranch.
- Increase the number of activities going on at the Ranch to facilitate an increase in interest for preservation.
- Focus first on Ranch preservation then branch out to other aspects of Keys' influence in park/area.
- Make the Keys family story real.
- Continue to offer supervised visits by art and photography classes.

In addition, there were many comments that noted the significance of the Keys Ranch and the desire/need to continue to preserve it as a unique look back at the region's desert homesteading past and the success of the Keys family.

The California Native Plant Society questioned why the historic clump of non- native invasive giant reed (*Arundo donax*) near the house might be preserved.

The USFWS noted that the desert tortoise was likely to be present in the area and that protocol surveys should be conducted.

Keys Ranch Designations

State Historic Preservation Office

In 1959, the first of the prehistoric archeological sites documented at Keys Ranch was initially recorded with the State Historic Preservation Office. Later, additional archeological sites were documented in the vicinity of Keys Ranch (see the *Affected Environment* section under *Archeological Resources*) and the following National Register listings required additional consultation with the State Historic Preservation Officer. There are currently seven recorded archeological sites within the Keys Ranch/Cow Camp district boundary (not including those in the vicinity of the Keys Ranch and Barker Dam). Five are prehistoric Native American sites. One is a multi- component site with the historic portion related to Keys Ranch and one site is recorded as an historic dump, with no mention of Keys Ranch.

National Register of Historic Places

In 1975, the ranch was listed as the Keys Ranch Historic District on the National Register of Historic Places (#75000174). Later consultation following the Cultural Landscape Inventory (NPS 2004) describing the Keys Ranch combined several individual nominations into two National Register districts and one National Register structure. The districts include the Desert Queen Ranch (National Register (NR) #75000174, 10/30/75) and Cow Camp (NR #75000228, 10/29/75). The structure is the Barker Dam (NR #75000173, 10/29/75). [*The boundaries established by these National Register nominations, however, are not consistent with historic land use or ownership patterns (township/range/sections)*]. None of the nomination documents mention the intact prehistoric archeological sites found near to or underlying the Keys Ranch complex; nor

were the prehistoric sites associated with Barker Dam, Wall Street Mill, Desert Queen Mine or Cow Camp mentioned. Prehistoric site eligibility for the National Register is not known.

California Point of Historical Interest
The ranch is also designated a California Point of Historical Interest (SPHI) No. 35.

Twentynine Palms Murals
In 1994, the Keys family was chosen as the subject for the first mural and in 1998, Bill Keys' mining association was chosen for the twelfth mural commissioned for the City of Twentynine Palms because of its significance to local history. The guide to the murals of Twentynine Palms states:

"Mural #1: Bill and Frances Keys. The Keys were pioneer homesteaders who settled at the Desert Queen Ranch in what is now Joshua Tree National Park. Bill Keys, born George Barth in Russia in 1879, came to Twentynine Palms in 1910. He was a cattleman, gold prospector, assayer, and an ingenious homesteader who could find a use for just about anything. Visitors who take a Park Service tour of the historic Desert Queen Ranch can see that resourcefulness today. This 14- foot by 80- foot mural was painted by Dan and Peter Sawatzky of Chemainus, B.C." and is located at 733365 29 Palms Highway at Pine Street. It was dedicated on November 19, 1994.

"Mural #12: Desert Gold Mining Days. Prospectors Oran Booth and Bill Keys were an active part of desert gold mining in the 1900s. Oran Booth arrived in 1928 and filed a claim on the site that became the Wall Street Mill, prospected in Gold Park, and later worked the Paymaster Mine, a gift from his friend Keys. In 1933, he filed on the 8- acre homestead pictured in this mural. Bill Keys, who arrived in 1910, established more than 30 mining claims in the area that is now Joshua Tree National Park. This 8- foot- by 30 foot, three- dimensional mural was created by Terry Waite of Twentynine Palms and John Whytock of Sugarloaf, CA." It is located at 6455 Mesquite Avenue (Chamber of Commerce) and was dedicated on February 21, 1998.

Riverside County Historic Landmark
The Desert Queen Mine is a Riverside County Historic Landmark.

Keys Ranch Significance Statements

The following significance statements developed by the writers of various draft plans and official planning documents (see Appendix 1 for a complete list) illustrate the reasons for the longstanding effort the park has undergone to preserve the essence of Keys Ranch.

National Register Nomination (1975): "Bill Keys' Desert Queen Ranch is of local historical significance as reflecting his career in the categories of agriculture and industry (mining). From the time he settled in the area (1910) and on this specific site (1916), William F. Keys was perhaps the most persistent rancher, farmer and miner in the region. Others were temporarily more prominent, but none made their home in this high desert country and scratched out a living as did Bill Keys. He ran cattle, raised horses, mules, burros and goats, cultivated a fruit orchard, built myriad dams at his ranch and elsewhere in the area to collect water from scarce and infrequent rainfall, prospected, mined and established a lifestyle more unique than typical of other prospectors, miners, ranchers and farmers in the region."

Greene (1983): "If Keys had not been as hard a worker or as ingenious a thinker, as skillful a laborer or as determined a rancher, as good a miner or as astute a businessman, the ranch would never have existed. These are the qualities of Keys' life that should be studied and interpreted and that are preserved through the ranch. The ranch's primary importance, therefore, is due to its association with Keys and its status as an uncommon twentieth- century desert homestead and ranch."

Historic American Building Survey (1993): "The Keys' Desert Queen Ranch is an outstanding historical site of desert- based vernacular technologies displaying a range of architectural and engineering artifacts associated with the Euro- American era of settlement in the Mojave Desert."

Park General Management Plan (1995): The Keys Ranch "epitomized the Euro- American subsistence and entrepreneurial way of life in the California Desert during the late 19th and the early and middle 20th century in what became Joshua Tree National Park."

Spearing (1999): "Bill Keys was the only settler in the Monument who gained a comfortable long- term livelihood from his livestock, homesteading and mining ventures. His success was due not to luck or chance, but to the type of individual he was. Ambitious, independent, self- reliant, a hard worker, and a man quick to take advantage of any opportunity presented, Keys was able to eke an existence from the desert unaided by pension or welfare checks, by working with it, realizing its potential for adversity, yet appreciating its natural beauty and assets."

Cultural Landscape Inventory (2004): "The Keys Ranch Historic District is locally significant for its associations with ranching and industry (mining operations) in the Mojave desert (Criterion A), and for its associations with prospector and rancher William F. Keys, (Criterion B). The District consists of three primary areas within Joshua Tree National Park. These include the Desert Queen Ranch, Cow Camp and Barker Dam. The period of significance is from 1910 (when Keys began living at the ranch) until his death in 1969 [later modified during State Historic Preservation Office concurrence on the Cultural Landscape Inventory]. Most of the existing landscape characteristics and features also date from this time.

The ranch is significant because it is an outstanding example of an uncommon twentieth- century desert homestead and ranch (Criterion A). . . The ranch district represents one individual's ability along with his family to adapt and succeed in settling a hostile environment.

The wide variety of features that remain within the ranch include the ranch house, ore milling facilities, ranching compounds, agricultural areas and several dams. The outcome of this development was a ranch that provided a home as well as facilitated the mining and agricultural operations of Keys and his family.

Keys' occupation of the Desert Queen Ranch and his utilization of Cow Camp and Barker Dam established one of the most successful desert settlements in the region. He raised cattle, horses, burros, and goats; cultivated a fruit orchard, garden, grain crops; had numerous mining ventures, provided supplies and services for numerous other miners; established a local school, and raised a family. All of this was aided by the construction and augmentation of a number of masonry and concrete dams to impound and control critical water supplies, thus providing a reliable water supply essential for life in the Mojave Desert. The ranch's appearance is utilitarian in nature with its various use areas built in close proximity to one another. Indigenous rock, lumber, and native plants were the basic materials used at the ranch, Cow Camp and Barker Dam.

The Keys Ranch Historic District is significant because of its association with William F. Keys, (Criterion B), an infamous prospector and rancher who made significant contributions to the settlement of the Mojave Desert. Keys arrived in the area while the land was wide open and the native grasses were high, when neighbors were few and far between, and when a high degree of self- reliance was absolutely essential for survival. No towns of any size existed near the Keys homestead. Because of the great distance to neighboring towns that were accessed by primitive roads, the Keys family had to provide much of their own food and other necessities. The remote location of the ranch prompted Keys to build a guesthouse for relatives, acquaintances, and tourists who dropped by. Keys and his family adapted well to the desert and thrived. In addition to his large ranch, Keys built several roads. The entire Keys Ranch historic district is an example

of how Keys modified the harsh desert environment to provide the necessities of life. Keys was the only settler in the area now known as Joshua Tree National Park, who gained a comfortable long- term livelihood from his livestock, homesteading, and mining ventures. Keys and his family were able to sustain a livelihood due to their ambition, independence, self- reliance, and hard work. Keys was able to work with the desert by realizing its potential for adversity, yet appreciating its natural beauty and assets.

The Keys Ranch historic district retains a high degree of each of the seven aspects or qualities that, in various combinations, define integrity according to National Register Standards—location, design, setting, materials, workmanship, feeling, and association. Contributive landscape characteristics include spatial organization, vegetation, circulation, buildings and structures, cluster arrangement, and small scale features. The remaining features of the Keys Ranch historic district convey its rich associations with William F. Keys and his agricultural and industrial influences on the local history of the Mojave Desert."

Public Scoping Comment Form (2005): (See Appendix 4) "Keys Ranch and its associated structure provide silent testament to the ability of some self- reliant late 19th and early 20th century homesteaders to adapt and thrive in the harsh Mojave Desert environment. The ranch exhibits the full range of desert homesteading activities and stories, including raising a family, ranching, mining, farming and retaining the water needed to make it all possible."

Relationship to Laws, National Park Service Policy and Park Planning

The management of the Keys Ranch Historic District is necessarily derived from a variety of federal laws, National Park Service Policy and park planning documents. Below is a summary of some of those most important to its management.

Selected Laws

Antiquities Act (1906) (Public Law (P.L.) 59- 209, 34 Stat.225) provided for protection of historic, prehistoric, and scientific features on federal lands, with penalties for unauthorized destruction or appropriation of antiquities. It also authorized scientific investigation of antiquities on federal lands subject to permitting and regulations.

National Park Service Organic Act (August 25, 1916) (P.L. Law 64- 235, 39 Stat.535) established the National Park Service; directed it to manage the parks ". . . to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

Historic Sites Act (1935) (P.L. 74- 292, 49 Stat. 666) declared "a national policy to preserve for public use historic sites, buildings, and objects . . .

- Authorized the programs known as the American Buildings Survey (HABS), the Historic American Engineering Record (HAER), and National Historic Landmarks (NHL) program;
- Authorized the NPS to "restore, reconstruct, rehabilitate, preserve, and maintain historic or prehistoric sites, buildings, objects, and properties of national historical or archeological significance and. . . establish and maintain museums in connection therewith;" and
- Authorized cooperative agreements with other parties to preserve and manage historic properties.

The Historic Sites Act also directed the NPS to: "Develop an educational program and service for the purpose of making available to the public facts and information pertaining to American

historic and archaeologic sites, buildings, and properties of national significance. Reasonable charges may be made for the dissemination of any such facts or information."

Archeological Resources Protection Act (1979)(16 U.S.C. 470aa- 470mm, P.L. 96- 95) secured for the present and future benefit of the American people, the protection of archeological resources and sites on public lands.

National Historic Preservation Act (1966 as amended) (P.L. 89- 665, 80 Stat. 915; as amended by P.L. 91243, P.L. 93- 54, P.L. 94- 422, P.L. 94- 458, P.L. 96- 199, P.L. 96- 244, P.L. 96- 515, P.L. 98- 483, P.L. 99- 514, P.L. 100- 127, and P.L. 102- 575) declared a national policy of historic preservation, including the encouragement of preservation on the state and private levels. In addition, the act:

- Authorized the Secretary of the Interior to expand and maintain a National Register of Historic Places including properties of state and local as well as national significance;
- Authorized matching federal grants to the states and the National Trust for Historic Preservation for surveys and planning and for acquiring and developing National Register properties; established the Advisory Council on Historic Preservation; and
- Required federal agencies to consider the effects of their undertakings on National Register properties and provide the Advisory Council opportunities to comment (Section 106).

California Desert Protection Act (1994) (PL 103- 433) added 234,000 acres to Joshua Tree National Monument and reclassified it as a National Park. Congress declared its intent to: ". . . preserve unrivaled scenic, geologic, and wildlife values. . . unique natural landscapes. . . protect and preserve historical and cultural values. . . and diverse ecosystems of the California Desert . . . provide opportunities for compatible outdoor public recreation, protect and interpret ecological and geological features and historic, paleontological, and archeological sites, maintain wilderness resource values, and promote public understanding and appreciation of the California desert."

National Park Service Policy

National Park Service Management Policies (NPS 2001a)

"The cultural resources management policies of the National Park Service are derived from a suite of historic preservation, environmental and other laws and proclamations, Executive Orders and regulations . . . Taken collectively, they provide the Service with the authority and responsibility for managing cultural resources in every unit of the national park system so that those resources may be preserved unimpaired for future generations (NPS 2001: 5.0)."

The Service's cultural resource management program involves:

- Research to identify, evaluate, document, register, and establish basic information about cultural resources and traditionally associated peoples.
- Planning to ensure that management processes for making decisions and setting priorities integrate information about cultural resources, and provide for consultation and collaboration with outside entities; and
- Stewardship to ensure that cultural resources are preserved and protected, receive appropriate treatments (including maintenance), and are made available for public understanding and enjoyment (NPS 2001: 5.0).

Effective park stewardship requires informed decision- making about a park's cultural resources. This is best accomplished through a comprehensive planning process. Effective planning is based on an understanding of what a park's cultural resources are, and why those resources are significant. To gain this understanding, the Service must obtain baseline data on the nature and types of cultural resources, and their (1) distribution; (2) condition; (3) significance; and (4) local, regional and national contexts. . . .

Planning decisions will follow analysis of how proposals might affect the values that make resources significant, and the consideration of alternatives that might avoid or mitigate potential adverse effects. . . To ensure that approaches and alternatives for resource preservation have been identified and considered, planning processes that could affect cultural resources must include cultural resources specialists, traditionally associated peoples and other stakeholders, and provide them with appropriate notification about opportunities to become involved (NPS 2001a: 5.2).

Treatment of Cultural Resources With some differences by type, cultural resources are subject to several basic treatments (See Appendix 5), including (1) preservation in their existing states; (2) rehabilitation to serve contemporary uses, consistent with their integrity and character; and (3) restoration to earlier appearances by removal of later additions and replacement of missing elements. Decisions regarding which treatments will best ensure the preservation and public enjoyment of particular cultural resources will be reached through the planning and compliance process, taking into account:

- The nature and significance of a resource and its condition and interpretive value;
- The research potential of the resource;
- The level of intervention required by treatment alternatives;
- The availability of data, and the terms of any binding restrictions; and
- The concerns of traditionally associated peoples and other stakeholders (NPS 2001a: 5.3.5)

Director's Order 28: Cultural Resources Management Guideline
The dual nature of cultural resources, an inseparable union of social and physical qualities, leads directly to the three central issues of their management: first, to discover the significance or meaning of each resource; second, to slow the rate at which their essential material qualities are lost; and third, to support the use and enjoyment of cultural resources while minimizing negative effects on them. (NPS28: 1D1)

The goal of cultural resource planning in the National Park System is to identify and preserve park cultural resources and provide for their appreciation by the public. It strives to integrate cultural resource concerns into broader NPS planning processes, to avoid or minimize harm to cultural resources, to identify the most appropriate uses for cultural resources, and to determine the ultimate treatment (preservation, rehabilitation, restoration, reconstruction/reproduction) or deliberate neglect or destruction for cultural resources. (NPS- 28: 3A)

Park Planning Documents
The following major plans and reports on the Keys Ranch illustrate the breadth of planning that has taken place at the site over the past 30 years. The key issues noted in these documents which relate to the current planning effort are summarized in Appendix 1 or in the text of the following plan.

GENERAL DOCUMENTS
- ❖ Natural Resources Management Plan (NPS 1993)

DOCUMENTS WITH RECOMMENDATIONS SPECIFIC TO KEYS RANCH
- ❖ Collection Management Plan (NPS 1990)
- ❖ Joshua Tree National Park General Management Plan/Development Concept Plans (NPS 1995)
- ❖ Lost Horse Unit, Development Concept Plan (included in the May 1995 GMP)

- ❖ Backcountry and Wilderness Management General Management Plan Amendment (1999)
- ❖ Museum Management Plan (NPS 2005)

The following specific management strategies related to Keys Ranch were identified as part of the General Management Plan selected alternative:

- Each historic site or scene from the 13 properties listed on or eligible for listing on the National Register of Historic Places would be protected, interpreted and preserved (NPS 1995: 26). Preservation means that the historic character of a property would be retained and the historic fabric repaired and stabilized as needed, according to the Secretary of Interior's Standards.
- Interpretation of some preserved properties also would involve the display and demonstration of period artifacts and equipment. At Keys Ranch, for example . . . visitors could see period artifacts in the windows of the ranch house. Some machines, such as pumps would be repaired and made operable. The equipment to be repaired would be operated by local volunteers and would provide more of the ambience of the place in its heyday (NPS 1995: 27).
- Keys Dam consists of three separate dams (upper, middle and lower Keys Ranch dams) northeast of the main ranch house that form a single reservoir. Along with the other two reservoirs in the park, this is an important water source for wildlife. The NPS would prefer to continue this use and is seeking an acceptable, safe water level. The dam would be maintained and its historic fabric preserved to interpret strategic frontier water sources for homesteading, ranching and mining (NPS 1995: 27).
- Keys Ranch, Barker Dam, Desert Queen mine area, Wall Street Mill . . . would all be better interpreted. Keys Ranch would be stabilized and used as the primary location in the interior of the park for ranching/homestead cultural history education. Public access would be by guided tours only and visitors would be prohibited from entering the structures. Interpretation would not be limited to the ranching story, but could include the broader continuum of occupation and use from prehistoric times to the present. The ranch would lend itself to costumed interpretation, and tours would continue to be given by the NPS (NPS 1995:31).

KEYS RANCH MANAGEMENT DOCUMENTS

Cultural Resources Management Plans

- ❖ Keys' Desert Queen Ranch Preservation Study (NPS 1975)
- ❖ Keys Ranch National Register Nomination (NPS 1975)
- ❖ Country Nodes: An Anthropological Evaluation of the William Keys' Desert Queen Ranch, Joshua Tree National Monument (Hickman (Hunter) 1976)
- ❖ Historic Resource Study: A History of Land Use in Joshua Tree National Monument (Greene 1983):
- ❖ Cultural Landscape Treatment Recommendations (NPS 1992)
- ❖ Historic American Buildings Survey, Written Historical and Description Data (NPS 1993)
- ❖ Rescue Excavation at Huntington Mill, Keys Desert Queen Ranch, Joshua Tree National Park (Warren and Schneider 1997a)
- ❖ Incomplete Unedited Draft Archaeological Excavations of Historic and Prehistoric Sites at Keys Ranch, Joshua Tree National Park (Warren and Schneider 1997b)
- ❖ Draft Archaeological Excavations and Surface Collection of Historic and Prehistoric Sites at Keys Ranch, Joshua Tree National Park (Warren and Swope 1998)
- ❖ Keys Ranch Road Profile Field Notebook (Schneider and Wright 1997)
- ❖ Cultural Landscape Inventory (Level 0) (NPS 1998)
- ❖ Desert Queen Ranch Preliminary Stabilization Recommendations (NPS 1999)
- ❖ Pest Management Report (Hoddenbach 1999)

- Cultural Landscape Inventory (Level 2), Keys Desert Queen Ranch Historic District (NPS 2004 from 1999 draft)
- Joshua Tree National Park Historic Preservation Report: Keys Ranch Historic Structures Stabilization Project (NPS 2001b)

Dam Inspections

- Maintenance Assistance Report: Inspection of Dam, Joshua Tree National Monument (Ohmstede 1980)
- Downstream Hazard Classification: Lower, Middle and Upper Keys Ranch Dams, Joshua Tree National Monument (NPS 1992)
- Lower Keys Dam Joshua Tree National Park Report of Evaluation Team (BOR 19995a)
- Middle Keys Dam Joshua Tree National Park Report of Evaluation Team (BOR 1995b)
- Upper Keys Dam Joshua Tree National Park Report of Evaluation Team (BOR 1995c)
- Joint Examinations by National Park Service and Bureau of Reclamation (BOR 2004)

Draft Management Plans

- Draft Desert Queen Ranch Management Plan (Pepito 1997)
- Draft Management Plan Desert Queen Ranch (Spearing 1999)
- Draft Desert Queen Ranch Management Plan (McCutchen 2001)

II. ALTERNATIVES

The range of alternatives was developed based on guiding principles of cultural and natural resources preservation management, the purpose and significance of the park and the criteria associated with the Keys Ranch's placement on the National Register of Historic Places. Park and regional staff and the public assisted in the development of the Alternatives.

The following overall goals to protect, interpret and preserve* Keys Ranch resources framed alternative development:

- Manage the Keys Ranch as one of the Park's Significant Cultural Resources
- Perpetuate Structures (Stabilize, Repair, Adaptively Reuse and/or Restore as Appropriate)
- Restore Machinery to Working Condition (Including Displaying/Demonstrating Period Artifacts and Equipment)
- Interpret the Ranch Within the Context of its Relationship to the Park and Community
- Facilitate Safe Public Access to the Ranch as Appropriate for Resource Preservation and Quality Visitor Experiences
- Maintain Operational Efficiency and Staffing to Meet Program Needs
- Maintain Historic Vegetation (Native, Ornamental, Horticultural)
- Maintain a Local Water Source for Wildlife and Park Operations (Orchard Maintenance, Fire Management, and Recreation/Human Use)
- Remove Appropriate Non- Native Invasive Species
- Determine Appropriate Structural Firefighting Techniques for the Ranch

*(according to the Secretary of Interior's Standards for preservation, rehabilitation, restoration, reconstruction – see Appendix 5)

Alternative 1: No Action (Continue Current Management: Non-Systematic Protection of Keys Ranch)
This alternative would continue to protect Keys Ranch resources on a case- by- case basis, as time and funding permit and/or as needed.

Alternative 2: Minimum (Systematic, Prioritized Protection of Keys Ranch Resources)
Through a series of preservation maintenance actions, this alternative would enhance visitor safety and protection of Keys Ranch resources listed on the National Register of Historic Places.

Alternative 3: Moderate Inward Focus (Enhanced Prioritized Protection and Selective Restoration of Keys Ranch Resources and Multi-Faceted Interpretive Programming Leading to Additional Restoration/Use of Keys Ranch Resources)
By enhancing preservation of historic resources at the Keys Ranch, this Alternative would provide visitors with multiple interpretive opportunities to experience firsthand these historic resources (including helping to facilitate their protection through community historic preservation workshops).

Alternative 4: Moderate Outward Focus (Enhanced Prioritized Protection and Selective Restoration of Keys Ranch Resources coupled with Increased Opportunities to Understand the Significance of Preserving Ranch Resources within the Context of the Desert Homesteading Experience)
This alternative would enhance the historic setting of the Keys Ranch and provide visitors with opportunities for heightened understanding of the relationship of the ranch to other park resources, desert homesteading in local communities and the modern expansion/current context of desert living.

Alternative 5: Maximum (Enhanced Prioritized Protection and Widespread Restoration of Keys Ranch Resources coupled with Multiple Interpretive Opportunities for Connecting the Keys Ranch Experience to Other Park Resources and Communities beyond the Park)

Through a restored historic setting and working landscape supported by the park and community, visitors would have greatly enhanced understanding and experience of Keys Ranch Resources.

Detailed Description of Alternatives

Following the summary of alternatives below is a chart which identifies the individual components of each alternative.

Alternative 1: No Action

(Continue Current Management: Non-Systematic Protection of Keys Ranch)

Alternative 1 would continue to protect Keys Ranch resources on a case- by- case basis, as time and funding permit and/or as needed.

Historic Structures/Landscape

Under this Alternative, there would continue to be an emphasis on completing high priority repair and rehabilitation projects as they were identified based on damage or as a result of special funding initiatives, such as under cyclic funding for activities like roof replacement. Keys Ranch buildings would be stabilized to prevent further deterioration of the characteristics and features that make them eligible for the National Register of Historic Places as needed and as time and funding allowed.

Existing elements of the historic landscape, as determined by the Keys Ranch National Register listing, including the buildings, orchard, and other contributing features would be maintained and the park would work to ensure that the addition of new features or repair of existing features did not contribute to the loss of their integrity.

Although there would be no systematic inventory and assessment of Keys Ranch resources, these would be done as opportunities arose. Incidental conditions surveys would also be conducted, primarily storm damage assessments.

Several non- contributing structures would continue to remain in the Historic District.

Research would continue to be facilitated as opportunities arose.

Museum Collections

The recommendations from the 2004 Museum Management Plan would be implemented, including ongoing management of the existing collections according to the park's Scope of Collections statement. Based on these recommendations, cataloged objects still at the Keys Ranch would be formally de- accessioned, because they cannot be reliably maintained in that environment.

There would continue to be limited display of the Keys Ranch Collection in the main park visitor center (one exhibit case) and occasional opportunities for display of other items from the collection based on cooperation with other museums or historical societies.

Currently collected oral histories would continue to be preserved.

Non-Museum Objects

The wide array of non- museum objects (those not formally accessioned into the Keys Ranch Collection) and still lying mostly in the open air at Keys Ranch, would continue to be available for incidental visitor perusal during tours. In addition, the park would continue to explore the historic uses of and preservation strategies for these objects as time and funding permitted.

Preservation maintenance would continue to be used to maintain the use of the "back cracker," washing machine, rock drill and other appropriate demonstration equipment in working order.

Visitor Access, Circulation and Caretaker Facilities
Non- historic features and structures, such as the outhouse, the visitor parking area, the vault toilets, the water tank, the caretaker's trailer site, and adjacent maintenance shed, and others would continue to be maintained, despite their presence within the Historic District.

Existing roads and trails would continue to be maintained, including (upon request) handicapped accessibility via the historic road to the ranch.

Interpretation
Visitors would continue to experience Keys Ranch on reservation- only (or as space permitted, pay- at- the- gate) Park Ranger or volunteer- led guided tours staged from the Cow Camp Parking Area and the internal ranch parking area (ranger- led carpool). Although visitors would not be permitted to enter the fragile structures, they would be able to peer inside the windows at interiors that exhibited some of the characteristics found during the Keys era. As appropriate, objects from the Keys family or similar representative objects displayed inside would continue to make looking in the windows interesting.

The mills, irrigation system and well would continue to be maintained in their current (non-working) condition and their use could continue to be described by park staff for visitors.

Specialized tours would continue to be conducted upon request depending on staffing availability and limited information about the Keys Ranch would continue to be available from staff and from existing wayside exhibits along the road and from the self- guided trail sign at Barker Dam. The 1977 Art Kidwell film on Keys Ranch would continue to be shown upon request to visitors at the main park visitor center in Twentynine Palms.

Education
The curriculum- based education program for 4th and 6th graders would continue to be conducted (See *Affected Environment* section under *Interpretation / Visitor Experience* for additional information).

Other Natural and Cultural Resources Management
As staffing and funding opportunities arose, additional inventory of archeological, ethnographic, wildlife, vegetation and other park resources would continue.

The administrative boundary closure would continue to protect and allow for routine monitoring of populations of rare plants, desert bighorn sheep, desert tortoises and other species using the Keys Ranch area.

As appropriate, the park would continue to remove non- native invasive plants and to address pest management issues on a case- by- case basis or systematically if provided through a special project or funding initiative. In addition, after analysis of impacts, use of native materials to restore Ranch resources would continue to be approved on a case- by- case basis.

Partnerships
The park would continue to recruit volunteers to guide Keys Ranch tours, to provide caretaking for the ranch, especially during the peak visitor use season, and to seek community partnerships that would support ranch operations.

Administration/Maintenance
The park would continue to rely on existing staffing and funding to support the current level of Keys Ranch operations. Upon the cessation of project funding for interpretive programming, these would cease unless additional sources of revenue could be found. Preservation maintenance and rehabilitation projects would continue to be funded as special projects.

Maintenance operations would continue to be staged out of other park facilities and out of the shed near the existing caretaker's trailer site. Preservation efforts would continue to be focused on high priority structures, such as the Ranch House, the Joshua Tree corral fence, etc. Roofing, siding and other building features would be repaired or replaced as cyclic maintenance funding requests were granted. Staff would continue to be encouraged to obtain historic preservation training and skills as offered by the NPS or other agencies and as applicable to park historic structure preservation and rehabilitation.

Dams
As appropriate and determined by further investigation into feasibility, the park would continue to maintain some water capacity in the reservoirs (Keys, Barker, Cow Camp), recognizing the seasonality of the water resource, the National Register listing of the dams, and visitor and employee safety with respect to the deteriorating condition of the dams.

Safety/Security
The park would continue to take steps to secure the Keys Ranch from further deterioration and vandalism, particularly during periods of low use through ongoing routine patrols, periodic staff presence, recruitment of volunteer site caretakers, implementation of quick response to identified safety issues, and by continuing investigations into hazardous materials used in mining and other previous operations at the Ranch.

See the *Alternative Comparison Chart* below for additional specific actions that would be implemented as part of Alternative 1.

Actions Common to All Action Alternatives (2-5)
The following actions would be implemented as part of Alternatives 2- 5. They consist primarily of a series of historic preservation and rehabilitation strategies that would secure the future of the Keys Desert Queen Ranch as one of the park's premiere cultural resources. These actions also address a number of the issues raised during internal (NPS and park) and external (public, agency and organization) scoping. Although many of these may be similar to the actions currently being carried out under Alternative 1, they differ in breadth, in that they consist of more systematic and comprehensive planned management strategies for maintaining Keys Ranch resources, instead of similar strategies implemented as time, funding and opportunity permits.

Cultural Resources

Historic Structures

- Stabilize remaining historic fabric and conduct preservation maintenance actions on remaining historic structures associated with Keys Ranch structures listed on the National Register of Historic Places.
- Systematically inventory and conduct conditions surveys for buildings and structures associated with the Keys Ranch.
- Inventory and document any remaining historic resources not already part of the Keys Historic District

Landscape

- Where possible, remove or enhance compatibility of non- contributing elements.

- Identify and maintain the historic landscape to ensure no additional loss of character defining features.
- Manage native, historic native and non- native vegetation to avoid damage to structures from vegetation encroachment.
- Develop a Cultural Landscape Report, including recommendations for vegetation/orchard/irrigation management for the ranch.

Museum Collections

- Preserve Keys Ranch museum collections.
- Implement recommendations of Museum Management Plan (see asterisked items below).
- *Prepare Historic Structures Reports for the buildings and Historic Furnishings Reports for applicable structures.
- *Prepare a Cultural Landscape Report for the site to establish a treatment plan for the area as a whole. The CLR should include a grid- applied documentation of the machinery and tools at the ranch as well as treatment plans for these major items and concentrations of smaller materials. The end product would be both full documentation of all associated parts of the resource and a series of interlocking plans for the maintenance and preservation of the Ranch as a whole (NPS 2005:62).
- *Systematically inventory, record, identify and assess the artifact assemblages at the Ranch.
- *De- accession cataloged items at the ranch.
- *Complete a provenance search for cataloged items in storage. Consider de- accession and repatriation of those items to the ranch site on a case- by- case basis.
- *Maintain a limited collection of personal objects from the Keys family that could be used for exhibit at locations away from the ranch site.
- *Process the Keys archives, create a finding aid to this material, and make it electronically available.

Oral History

- Preserve existing oral histories by creating transcripts and back- up copies.
- Conduct new oral history interviews; create transcripts and back- up copies.

Objects

- Continue to display representative non- collection items at the Keys Ranch.
- Maintain some Keys Ranch equipment in working order.
- Secure industrial curator to identify priority objects for preservation and treatment.
- Investigate feasibility of stabilizing mills.

Archeological Resources

- Conduct additional inventory and monitoring of historic and prehistoric archeological resources at Keys Ranch and associated sites.
- Document results of archeological site testing.
- Stabilize archeological sites.

Ethnographic Resources

- Inventory, document and preserve ethnographic resources as they are identified.
- Continue to allow repatriation of ethnographic resources as desired by local Native American Indian communities.

Natural Resources

Goal: Perpetuate natural processes where consistent with proposed Keys Ranch management.

- Systematically inventory and implement removal of non- native invasive plants

- Continue to inventory and monitor populations of rare plants, desert bighorn sheep and desert tortoise as well as other key species at the Keys Ranch.
- Retain restricted access to areas that support sensitive rare, threatened and endangered species.
- Develop guidelines for the collection and use of native materials to aid in the preservation of Keys Ranch resources – for example, the Joshua Tree corral fence.

Interpretation and Visitor Experience

Visitor Opportunities

- Expand interpretive and educational programming operations.
- Increase availability of written materials about Keys Ranch.

Visitor Access

- Increase the number of visitors who have an opportunity to experience Keys Ranch resources
- Use historic roads and trails for access, minimizing any new non- contributing additions to the Historic District.
- Take advantage of opportunities to increase accessibility of Keys Ranch resources.
- Maintain historic fencing alignments.

Partnerships

- Seek new sources of funding and staffing to support Keys Ranch operations.
- Seek partnerships within the local community and beyond, as well as with groups of experts with experience related to preserving the kinds of objects and structures related to the Keys Ranch.
- Hire an NPS partnership or volunteer coordinator to support development of partnership efforts with local communities and organizations.

Park Operations

Goal: Establish and maintain park operations necessary to implement maintenance of desired conditions.

Administration

- Establish funding mechanisms to continue interpretive and educational programming.
- Seek new funding sources and/or cooperative partnerships to preserve Keys Ranch resources.
- Develop a line item project list of every aspect of implementation. Immediately following approval of the plan, prioritize preservation and maintenance on a case- by- case basis.

Dams

- Investigate the feasibility of Preliminary Alternatives for Keys Ranch dams including implementing BOR recommendations.
- Maintain some water capacity in reservoirs (recognizing seasonality of resource).

Fire Management

- Adopt recommendations of Fire Management Plan.
- Use recently completed plan as a catalyst for an improved fire management strategy at the Keys Ranch.
- Identify and ensure some level of structural and wildland fire fighting resources/response in vicinity of Keys Ranch.
- Develop structural fire protection strategy for vulnerable resources at Keys Ranch (protection from ignition sources – lightning, wildland fire, arson, physical modifications to environment – defensible space, appropriate equipment on site).

Maintenance

Goal: Maintain facilities, infrastructure and ranch setting in good condition.

- Develop cyclic maintenance plans for all listed buildings and structures.
- Develop and implement phased priority restoration/maintenance plans.
- Conduct routine cyclic maintenance to replace building materials as needed.

Security

Goal: Secure the Keys Ranch from further deterioration and vandalism.

- Maintain day use only (restricted) operations.

Safety

Goal: Increase safety of operations at Keys Ranch

- Increase safety of operations at Keys Ranch through implementation of staff and volunteer training, tailgate safety sessions and systematic analysis of operations.
- Determine need for and conduct hazardous materials surveys at the Keys Ranch. Implement recommendations as required under applicable policy and law.
- Follow existing preliminary investigation report recommendations (mine site clean- up).

Alternative 2: Minimum
(Systematic, Prioritized Protection of Keys Ranch Resources)

Through a series of systematic preservation maintenance actions and by incorporating the management strategies under Actions Common to All (above), this alternative would enhance visitor safety and protection of Keys Ranch resources listed on the National Register of Historic Places.

Alternative 2 would have an emphasis on those actions needed to preserve historic resources and to remove a few non- contributing elements from the historic scene. The focus would continue to be on core resources at Keys Ranch.

(Note: *In the following section, except where differences are noted, actions noted above for Common to All and/or Alternative 1 would apply. For more information see the Alternatives matrix below.*)

Historic Structures/Landscape

Under this Alternative, there would initially be an emphasis on completing high priority repair and rehabilitation projects as they were identified based on damage or as a result of special funding initiatives, such as under cyclic funding for activities like roof replacement. Afterwards, the park would systematically stabilize and repair all buildings and structures on or eligible for the National Register in priority order.

The primary difference, with respect to historic structures and the Keys Ranch Historic District preservation, compared to Alternative 1 would be that in this alternative, preservation maintenance and repair would be systematic rather than opportunistic. Except for those listed below, other actions would be the same as those listed under Common to All.

The park would investigate the feasibility of restoring the irrigation system for use in maintaining the landscape of the Keys Ranch. In addition, the mills would be stabilized and repaired to allow visitors to imagine their use.

Non-Contributing Structures and Objects
Actions implemented under Alternative 2 would restore the Keys Ranch setting by opportunistically removing non- contributing elements as they deteriorate and as special funding is secured.

Museum Collections
In addition to exhibiting a limited collection of Keys Ranch artifacts in the Twentynine Palms Visitor Center, the park would seek out and take advantage of new opportunities to exhibit objects from the Keys Ranch Collection. Staff would review and supplement the oral history collection, ensuring that Keys family members and other associated people had an opportunity to contribute to the park's understanding of the Keys Ranch and Keys associated properties.

Non-Museum Objects
Under Alternative 2, the focus would be on finding out which items still at the ranch have significance based on their uniqueness, their rarity, their value to the Keys family or other criteria, based on recommendations of an industrial curator or other experts. As appropriate, the park would take advantage of new opportunities to curate additional objects, due to new information about their significance, replacing them onsite, if warranted with demonstration objects.

Visitor Access, Circulation and Caretaker Facilities
Visitors would continue to enter and park at Keys Ranch to access guided tours and would have the opportunity to peer inside buildings; however more extensive use of historic photographs would occur to show former interiors and other missing features. The current caretaker facilities would remain. Where possible, actions would be taken to reduce their visual impact.

Interpretation
Approximately 25 percent of park visitors would be provided with an opportunity to learn about Keys Ranch resources. To facilitate this, the basic guided tour program would be permanently funded and programming would be expanded to offer occasional specialized tours during peak periods. In addition, funding would be sought to develop new media exhibits.

Education
The education program would be the same as described under Alternative 1.

Other Natural and Cultural Resources Management
Existing known archeological resources would be adequately documented and investigated to modern standards to understand their relationship to each other and to use in gaining a better understanding of the prehistoric use of the Keys Ranch.

Partnerships
To facilitate preservation of Keys Ranch resources, the park would seek relationships with mining and other interest groups and other experts on late 19th and early 20th century homesteading activities to repair and restore equipment.

Administration/Maintenance
To ensure the permanent funding of the park guided tour program, the park would seek new internal sources of funding and staffing to support Keys Ranch operations.

Park staff would investigate the feasibility of using a portion of the Equipment shed to store materials needed to maintain Ranch resources.

Dams
Pending additional analysis of preliminary BOR recommendations, the following actions would occur as noted:

- The Keys reservoir would be maintained with a reduced water level, manipulated to ensure that it did not present a hazard to employees and visitors.
- Barker Dam reservoir would continue to be maintained for recreational and scenic values. If needed, seasonal closures would be enacted to protect employees and visitors during periods of high water.
- Cow Camp reservoir would be preserved until failure.

Fire Management
To ensure long- term preservation of Keys Ranch structures, vegetation setbacks would be evaluated for Ranch buildings and/or irrigation would be used to increase fuel moisture in the vicinity of Ranch buildings.

Safety/Security
The park would explore options for technological monitoring and alarming to enhance protection of Keys Ranch. As appropriate, particularly with increased interpretive programming and preservation maintenance, the park would increase the frequency of staff presence at the Ranch.

See the *Alternative Comparison Chart* below for other specific actions that would be implemented as part of this Alternative.

Alternative 3: Moderate Inward Focus [Preferred]

(Enhanced Prioritized Protection and Selective Restoration of Keys Ranch Resources and Multi-Faceted Interpretive Programming Leading to Additional Restoration/Use of Keys Ranch Resources)

By enhancing preservation of historic resources at the Keys Ranch, this Alternative would provide visitors with multiple interpretive opportunities to experience firsthand these historic resources (including helping to facilitate their protection through community historic preservation workshops). See the *Alternative Comparison Chart* below for additional specific actions that would be implemented as part of this Alternative.

Alternative 3 would have an emphasis on developing partnerships with a wide range of groups and individuals to restore use of certain key features and functions of the site to working order – with a focus on the Keys Ranch core area.

(Note: *As in Alternative 2, in the following section, except where differences are noted, actions noted above for Common to All and/or Alternative 1 would apply. For more information see the Alternatives matrix below.*)

Historic Structures/Landscape
As in Alternative 2, following stabilization or repair of the highest priority buildings and structures, the park would systematically repair or rehabilitate all buildings and structures on or eligible for the National Register in priority order. While buildings and structures in Alternative 2 could undergo stabilization and repair, under Alternative 3, they could also undergo rehabilitation and/or restoration to their historic appearance (including interiors) or working condition (structures).

Actions implemented under Alternative 3 would include restoration of the outward appearance of the Ranch House and could include replacement of the missing adobe barn with a structure of compatible form and character that would be used to protect key pieces of working or restored equipment and which would support other ranch needs. As funding allowed, other buildings could be treated to allow visitors to step inside roped entrances, instead of just peering in through windows at restored historic scenes.

This Alternative also calls for a regular, rather than opportunistic conditions monitoring survey, to ensure routine actions that would prevent further deterioration of historic structures, prior to catastrophic problems. Additional research on specific aspects of the Keys Ranch operations, including a Cultural Landscape Inventory of all sites related to mining and a Cultural Landscape Report for the core area of the Ranch is also called for under this Alternative.

A series of specific actions would also occur with respect to the preservation and perpetuation of historic vegetation. Under the CLR would be specific vegetation management recommendations for the Ranch. Missing historic vegetation, including the cottonwoods by the house and other specimen trees could be restored, according to historic documentation. The gardens could be cleared and/or replanted. The park would explore options for additional restoration of the orchard and would research historically used orchard species, creating back- up genetic stock for replacing existing historic pear trees. If the recent plantings were determined incompatible, they could be replaced but would be relocated elsewhere in the park to honor their original memorial intention.

Restoration of the windmill water and irrigation operations would also occur so that the water could be used for Ranch operations, including watering of the restored orchard, gardens or representative agricultural areas.

Serious consideration would be given not only to restoring the pug, one stamp or Chilean mills, demonstration arrastra and to food related (canning) equipment but also to obtaining demonstration equipment if use of the real objects would result in their deterioration.

Non-Contributing Structures and Objects
To the degree possible, pending deterioration and/or special funding, the park would remove, disguise, and/or relocate non- contributing elements in the historic landscape, particularly with the upper Ranch area – such as the chemical toilet and the water tanks.

Museum Collections
This alternative would go beyond preservation maintenance actions for the existing Keys Ranch Collection and would include canvassing nearby cities like Twentynine Palms and Joshua Tree for objects associated with the Keys Ranch to use (as appropriate and acceptable to the owner, as applicable) for demonstrations, collaborative museum display or for research.

Besides documenting and preserving existing oral histories, the park would systematically identify, conduct and document oral histories with people in Twentynine Palms, Joshua Tree and the vicinity, or even further, who have personal stories regarding Keys Ranch.

As called for by the GMP (NPS 1995), this alternative would also include developing an exhibit plan for the proposed gateway visitor center focusing on human history (especially that of Native Americans and Keys Ranch).

Historic Furnishings Plans, such as populating the schoolhouse with desks or the cottages with existing bed frames, would also be developed for Keys Ranch structures.

Non-Museum Objects
Under this Alternative, there would be additional focus on restoring selective equipment to working condition, with priority given to equipment and objects that have recently been operable. Over the long- term, upon consultation with applicable experts, the park would move on to restore additional equipment and objects desired for use or discussion by the interpretive program or for demonstration of real or representative equipment as the community outreach program develops.

Visitor Access, Circulation and Caretaker Facilities
While most facility visitor experiences would continue to be peering in the windows or walking through the accumulation of items that might be useful, there would begin, in this Alternative, to be opportunities to step inside some structures to get a better feel for the Keys' living conditions. In addition, visitors would begin to understand through explanations or demonstrations of stabilized, repaired or restored equipment, the routine work that was done at the Ranch.

Ranch boundary closure areas would be retained where needed for resource protection, however, the park would explore reducing the size of the administrative closure to the minimum necessary to protect these resources.

As in Alternatives 1- 2, other visitor, circulation and caretaker facilities would remain.

Interpretation
Approximately 50 percent of park visitors would be provided with an opportunity to learn about Keys Ranch resources. To facilitate this, interpretive opportunities would be expanded to offer an increasingly broad spectrum of activities over time as equipment was restored, community partnerships established and better site preservation (stabilization, repair and restoration) ensues. For example, demonstration tours could be offered as Ranch equipment was restored to working order. Over the long- term, the park would take advantage of opportunities to tell more of the natural resources / Native American connection to Keys Ranch, focusing on what brought Keys to the desert and what enabled him to prosper. In addition, as mining equipment was restored, historic mining tours, visiting a sequence of Keys Ranch sites, including the arrastra, one- stamp mill, Huntington Mill, Desert Queen Mine and Wall Street Mill.

As greater focus on the Keys Ranch as a premiere park cultural resources site occurred, the frequency of tours would also increase and the park could experiment with conducting limited (monitored) self- guided tours of Keys Ranch.

As tour opportunities increased and expanded their focus, the park would publish an insert or schedule of Keys Ranch themed experiences, including tours, educational programs, campfire programs, and experiences offered at other nearby related park and community sites. In addition, the park would seek funding for a Keys Ranch orientation film and begin to add consistency and breadth to the existing exhibits about the site located throughout the park, perhaps telling the story of how Keys View is related to Bill Keys and expanding the story of Keys relationship to Barker Dam and other areas used for cattle grazing and mining.

A series of thematic wayside exhibits would be developed to interpretively link Keys sites throughout the park and community, including, for instance, the Keys murals in Twentynine Palms and along the route Keys took to get to Banning. Brochures, related to specific issues of interest, at Keys Ranch would also be developed.

Finally, partnerships with the Desert Institute (a private non- profit educational organization) would be established to support the interpretive program at Keys Ranch and to offer extended interpretive opportunities and workshops to general park visitors as well as community groups.

Education
In the short- term, the educational program would remain the same, over the long- term additional themes would be added to the education program, allowing educators a wider choice and opportunities for repeat visits to more fully understand early desert homesteading.

Other Natural and Cultural Resources Management
Archeological site testing of other historic areas of significance associated with Bill Keys (beyond the Keys Ranch core) would be conducted to gain additional contextual information about Ranch operations and Keys' influence in the region.

To further minimize the spread of non- native invasive species, the park would restore denuded sites not being managed as part of the Keys Ranch Historic District, to native desert vegetation.

Partnerships
Over the short- term, partnership actions would be the same as Alternative 2, however, a greatly expanded partnership program would eventually be part of Alternative 3. To support it, the park would seek additional internal and external sources of staffing and funding. Strong partnerships with local communities would be developed and the park would explore opportunities to partner with local historical societies, preservation groups, 4- H organizations, and local business interests that could both support (adopt) the restoration of specific pieces of equipment or could assist with doing applicable work.

There would be a focus on getting local groups to help manage the Keys Ranch and to maintain and enhance local interest and involvement in the preservation of the site. If a year- round caretaker could not be obtained, a short- term caretaker rotating volunteer schedule would be developed among interested individuals and groups. Organized groups, including Elderhostel courses, researchers, adult education groups, etc. would assist in the restoration of the Ranch under the expertise gained from developing relationships with specialists.

Research partnerships would also be developed with educational institutions to further explore and elucidate the historical context of Keys Ranch.

Administration/Maintenance
Administrative actions would be the same as Alternative 2, while maintenance support facilities could be developed under Alternative 3 to support the proposed expanded operations, with additional storage being located in a rehabilitated historic structure, in a compatible structure located in place of the adobe barn or elsewhere as appropriate and as disguised from the viewshed of the Historic District. In addition, staff would seek out training to be able to assist in the restoration of equipment and structures.

Dams
Pending additional analysis of preliminary BOR recommendations, the following actions would occur as noted:

- Keys: Limit water holding volume and consider reconnecting the dam to the transport and irrigation system for onsite water storage, firefighting capability and other uses.
- Barker: Same as Alternative 2.
- Cow Camp: Same as Alternative 2.

Fire Management
Actions would be the same as in Alternative 2.

Safety/Security

Actions would be the same as in Alternative 2.

Alternative 4: Moderate Outward Focus

(Enhanced Prioritized Protection and Selective Restoration of Keys Ranch Resources coupled with Increased Opportunities to Understand the Significance of Preserving Ranch Resources within the Context of the Desert Homesteading Experience)

This alternative would enhance the historic setting of the Keys Ranch and provide visitors with opportunities for heightened understanding of the relationship of the ranch to other park resources, desert homesteading in local communities and the modern expansion/current context of desert living. See the *Alternative Comparison Chart* below for additional specific actions that would be implemented as part of this Alternative.

Alternative 4 is very similar to Alternative 3, however once preservation of the Keys Ranch core was achieved, long- term goals would include using the partnerships to restore use of key features and functions beyond the Keys Ranch core area, including Barker Dam and the Wall Street Mill, Keys View and other Keys related sites in the park and vicinity.

(Note: *As in Alternative 2, in the following section, except where differences are noted, actions noted above for Common to All and/or Alternative 1 would apply. For more information see the Alternatives matrix below.*)

Historic Structures/Landscape

Initial actions would be the same as Alternative 3, however in the long- term, additional research would be completed to link other Keys- related sites. Cultural Landscape Inventories would be completed for the Wall Street and Desert Queen Mines, while the Cultural Landscape Report would include not only the Keys Ranch core, but all sites related to Keys.

Comprehensive restoration of the irrigation system would lead to its use in irrigating representative ranching and farming areas below the core Keys Ranch.

Non-Contributing Structures and Objects

Portable demonstration mills would be obtained for use in offsite special events, such as Twentynine Palms' Turtle Days and other fairs.

Museum Collections

Over time, more Keys objects would be placed on display at local community museums, university museums, special and traveling exhibits.

Non-Museum Objects

Actions would be the same as Alternative 3.

Visitor Access, Circulation and Caretaker Facilities

This Alternative would include the development of an information station (open air kiosk) with sheltered panels, mostly likely located adjacent to the Barker Dam parking area which would describe the Keys Ranch story. This information station could be used alone or in the long- term as a staging area for conducting guided tours of Keys Ranch. It would provide an all- season, general public use site where more park visitors would learn about Keys Ranch.

In addition to the rehabilitation of the Ranch House that would occur under Alternative 3, improvements would be made that could increase its accessibility to visitors. This alternative could also include the park experimenting with different public transportation options, for

instance, guided shuttles leaving from the Visitor Center or Barker Dam and going to Keys Ranch or Keys Ranch and other related sites on a pre- determined schedule.

Barker Dam, Wall Street Mine, Desert Queen Mine and Keys Ranch would be connected through an expanded system of trails. New trails could link Keys Ranch with Keys View.

A new caretaker residence would be constructed outside of the view of the Keys Ranch Historic District, but could be constructed within the current administrative boundary area.

Interpretation
While the interpretive goal of reaching 50 percent of park visitors with an opportunity to learn about Keys Ranch resources would be the same, additional efforts would be made to achieve it, including physically and interpretively linking the various Keys sites in the park and vicinity with trails, brochures and thematically linked caravan tours.

There would be a strong emphasis on staging the interpretive experience from the Barker Dam area by developing a Keys Ranch kiosk and telling the stories of the Wall Street Mill, Barker Dam, former cabin site, the Barker Dam pictographs altered by Disney filming, and others at the site.

A Keys Ranch road tour guide would be developed to link sites within and outside the park. Self-guided tour brochures or folders would be developed for Keys Ranch and related sites and on different aspects of Keys Ranch, for instance mining, homesteading, ranching, horticulture / farming and the Keys family lifestyle.

Finally, as noted above, a small visitor information station would be developed at Barker Dam.

Education
In addition to the expanded onsite education program as described under Alternative 3, the park would develop an offsite curriculum- based educational program that would be independently available to groups through the Teaching With Historic Places program.

Other Natural and Cultural Resources Management
The park would seek additional opportunities to investigate archeological resources (prehistoric and historic) through local colleges and universities.

Systematic identification of ethnographic resources at Keys Ranch would occur in consultation with appropriate Native American tribes.

Partnerships
Additional partnerships would be investigated, including for activities such as interpretation collaboration, site management, vegetation maintenance and equipment maintenance.

Administration/Maintenance
Under this Alternative the park would hire a maintenance and or law enforcement worker caretaker to provide more regular security and surveillance for Keys Ranch. In addition, the park would increase its staff and/or relationship to community expertise in and provide access to all applicable construction trades needed for managing Keys Ranch.

Dams
Actions associated with dam preservation and maintenance would be the same as Alternative 3, however, the park would investigate the feasibility and usefulness of replacing the feeder pipe to the watering trough below Barker Dam as an added demonstration of the connectedness of Keys Ranch and Barker Dam.

Fire Management
Actions to support fire management would be the same as in Alternative 2.

Safety/Security
Because there would be more going on at the Ranch and more investment in restored equipment and site caretaking, the park would consider implementing comprehensive electronic surveillance, including the installation of a power supply, to ensure the security of the Ranch during the off- season, periods of low use or vacation/lieu days of site caretaker(s).

Alternative 5: Maximum

(Enhanced Prioritized Protection and Widespread Restoration of Keys Ranch Resources coupled with Multiple Interpretive Opportunities for Connecting the Keys Ranch Experience to Other Park Resources and Communities beyond the Park)

Through a restored historic setting and working landscape supported by the park and community, visitors would have greatly enhanced understanding and experience of Keys Ranch Resources. See the *Alternative Comparison Chart* below for additional specific actions that would be implemented as part of this Alternative.

Alternative 5 would build on the efforts noted in Alternatives 3 and 4 and would develop the Keys Ranch site as a working landscape, with an emphasis on maximum rehabilitation or restoration to retain the historic character and to focus it as the park's premiere cultural resources site.

(Note: *As in Alternative 2, in the following section, except where differences are noted, actions noted above for Common to All and/or Alternative 1 would apply. For more information see the Alternatives matrix below.*)

Historic Structures/Landscape
All buildings and structures listed on or eligible for the National Register and associated with Keys would be rehabilitated or restored, including restoration of the Ranch House and other structures as appropriate over time to allow interior visits by the public.

Non-Contributing Structures and Objects
Only in this Alternative would there be immediate plans to remove the intrusions on the historic scene, including the current visitor parking lot and vault toilets and caretaker trailer site.

Other actions would include removing intrusions on the historic scene encompassed by Keys Ranch, considering views from Barker Dam; Wall Street Mill; views into and out of Ranch; view into and out of the dams; as well as linkages to Keys View.

Museum Collections
Actions would be the same as those in Alternatives 3 and 4.

Non-Museum Objects
In addition to those actions identified in Alternative 3, all major equipment would be returned to operating condition over time.

Visitor Access, Circulation and Caretaker Facilities
Most park visitors would not only have an opportunity to learn about but would also visit Keys Ranch and would leave the park with an understanding of Keys Ranch and historic issues.

The Ranch House would be made accessible, code compliant and structurally sound to allow interior visits by the public.

A small visitor contact facility (of approximately 1,600 square feet) would be built near the existing Cow Camp staging area. Ideally, it could be formed from natural materials produced in the same way some of the ranch buildings were constructed, such as adobe, with a small primitive office and exhibit/gathering space for tours. This would allow the park to relocate the parking area and vault toilets from within the Historic District and to restore the site to its former historic or native appearance. In addition, the road would be gated near Barker Dam and the park would explore offering alternative transportation options to Keys Ranch visitors, such as small shuttles or wagon tours (Alternatively, the park could stage tours from Barker Dam). To more fully acknowledge the Historic District circulation patterns, this Alternative would re- use the upgraded (without paving) historic road to the site. As appropriate, non- historic internal and external fencing would be modified to acknowledge historic patterns and to support proposed new operations.

As in Alternative 4, the park would relocate the caretaker trailer site and restore it to historic or native conditions.

Interpretation
In the short- term actions would be the same as in Alternative 3. Over the long- term, visitors would observe and possibly assist in the demonstration of working representations of tools and equipment used at the Ranch. The park would also develop a series of new programs, including self- guided tours for related Keys Ranch sites, on- and off- site community programs, bus tour orientations, satellite visitor center programs (such as slide presentations and new technology exhibits). As in other alternatives, a variety of specialized interpretive programs would also be offered, however in Alternative 5, they would occur semi- regularly. And, finally, as noted above, visitors would be invited to go on tours and/or a supervised walk- through of the Ranch House interior.

To facilitate the extended partnership program, the park would increase the availability of publications and press releases about programming at the Ranch, including newspaper and magazine articles, brochures and maps.

In addition, a series of in- depth short films and/or brochures would be developed on a variety of topics of interest associated with the Ranch – including Native Americans, Keys' family history, mining, etc. And, a computerized "virtual tour" of the Ranch would be developed for web application and for use in off- site educational programs.

Education
Actions would be the same as in Alternatives 3 and 4.

Other Natural and Cultural Resources Management
Natural building materials (such as Joshua Trees, wood, etc.) would be stockpiled according to needs identified in repair and rehabilitation plans.

Partnerships
The park would seek both additional staffing (in maintenance, volunteer coordination, interpretation, and historic preservation) and funding as well as collaborative partnerships to support the more extensive Keys Ranch operations.

Administration/Maintenance
The park would facilitate a coordinated approach to implementation of proposed actions by establishing a Keys Ranch stewardship team comprised of staff from each division in the park. In addition, park staff would seek out details and partnerships that would expand their specialized historic preservation skills.

Dams
Instead of seeking to maintain the existing dams in their current condition for as long as possible, as under other Alternatives, the park would secure funding and designs appropriate to rehabilitate the dams according to the Secretary's Standards.

Fire Management
To support the increased array and investment in historic and visitor facilities at Keys Ranch, the park would investigate the feasibility of installing a high pressure fire suppression system in appropriate structures.

Safety/Security
Actions would be the same as in Alternative 4.

Environmentally Preferred Alternative

In accordance with Director's Order- 12, *Conservation Planning, Environmental Impact Analysis, and Decision- making* and CEQ (Council on Environmental Quality) requirements, the NPS is required to identify the "environmentally preferred alternative" in all environmental documents, including Environmental Assessments. The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act (NEPA) of 1969, which is guided by the CEQ). The CEQ (46 FR 18026 - 46 FR 18038) provides direction that the "environmentally preferable alternative is the alternative that would promote the national environmental policy as expressed in NEPA's Section 101," including:

- Fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations;
- Ensuring for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- Attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- Preserving important historic, cultural and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice;
- Achieving a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
- Enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources (NEPA Section 101(b)).

Generally, these criteria mean the environmentally preferable alternative is the alternative that causes the least damage to the biological and physical environment and that best protects, preserves, and enhances historic, cultural, and natural resources (46 FR 18026 – 46 FR 18038). (Council on Environmental Quality, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations" [40 CFR 1500- 1508], Federal Register Vol. 46, No. 55, 18026- 18038, March 23, 1981: Question 6a.).

In this Environmental Assessment, the Alternatives that best meet these criteria are Alternatives 3 and 4, which would include rehabilitation and restoration of some Keys Ranch structures and a

series of other actions that would enhance the visitor experience at the Ranch. Alternatives 1 and 2 would not be environmentally preferred because they meet only basic cultural resources preservation mandates and would result in many fewer people being able to experience Keys Ranch resources. Alternative 5, on the other hand, would have a series of environmental impacts beyond those that would occur in Alternatives 3 and 4 and which would focus on resource use over preservation.

Alternatives Considered But Rejected

Full Restoration of Keys Ranch Dams (Keys, Barker, Cow Camp)

This alternative has been rejected based on very high projected costs from the Bureau of Reclamation and because of the uncertainty of the feasibility of repair without removal of most historic fabric.

Benign Neglect of Keys Ranch Resources

This alternative was considered in previous planning documents, however, it would not meet the mandate of the National Park Service under its own policy and that associated with the National Historic Preservation Act and National Register of Historic Places to preserve historic structures, including the Keys Ranch Historic District.

Table 1
Keys Ranch Comprehensive Management Plan
Alternative Comparison Chart

Key: S-T = Short-term
L-T = Long-term

	Alternative 1: No Action Continue Current Management	***Actions Common to All Action Alternatives (2-5)***	**Alternative 2: Minimum Action**	**Alternative 3: Moderate (Inward Focus) [Preferred]**	**Alternative 4: Moderate (Outward Focus)**	**Alternative 5: Maximum**
ALTERNATIVE VISION	This alternative would continue current management of the Keys Ranch resources. Emphasis on high priority repair and rehabilitation as needed. Management focused on Keys Ranch core.	*The following strategies would contribute to maintaining the Keys Ranch resources in good condition.*	Through a series of preservation maintenance actions, this alternative would enhance visitor safety and protection of Keys Ranch resources listed on the National Register of Historic Places. Emphasis on those actions to preserve historic resources and to remove a few non-contributing elements of the historic scene – focus systematic priority actions in Keys Ranch core.	By enhancing preservation of historic resources at the Keys Ranch, this Alternative would provide visitors with multiple interpretive opportunities to experience these historic resources firsthand, (including by helping to facilitate their protection through community historic preservation workshops). Emphasis on developing partnerships with a wide range of groups and interests to restore use of certain key features / functions of the site to working order – focus on Keys Ranch core.	This alternative would enhance the historic setting of the Keys Ranch and provide visitors with opportunities for heightened understanding of the relationship of the ranch to other park resources, desert homesteading in local communities and the modern expansion/current context of desert living. Once preservation of the Keys Ranch core was achieved, long-term goals would include using partnerships to restore use of key features and functions beyond the Keys Ranch core area, including Barker Dam and the Wall Street Mill, Keys View and other Keys related sites in the park and vicinity.	Through a restored historic setting and working landscape supported by the park and community, visitors would have greatly enhanced understanding and experience of Keys Ranch Resources. Emphasis on maximum rehabilitation and retention of historic character – focus on Keys Ranch core and beyond.
CULTURAL RESOURCES						
Historic Buildings and Structures **Goal**: *Improve preservation of cultural resources at Keys Ranch.*						
Preservation Maintenance	Continue to stabilize Keys Ranch buildings listed on the National Register of Historic Places as needed or as time and money permit.	*Stabilize remaining historic fabric and conduct systematic prioritized preservation maintenance actions on buildings and structures associated with*	Systematically stabilize and repair all buildings and structures on or eligible for listing on the National Register in priority order.	Systematically stabilize, repair and/or rehabilitate all buildings and structure on or eligible for the National Register in priority order.	Same as Alternative 3	Stabilize, rehabilitate, restore and/or reconstruct all buildings and structures listed on or eligible for the National Register.

	Alternative 1: No Action Continue Current Management	*Actions Common to All Action Alternatives (2-5)*	Alternative 2: Minimum Action	Alternative 3: Moderate (Inward Focus) [Preferred]	Alternative 4: Moderate (Outward Focus)	Alternative 5: Maximum
		Keys Ranch and listed on the National Register.				
Rehabilitation/ Restoration	Repair or rehabilitate historic buildings and structures upon damage or receipt of special funding.	---	Same as Alternative 1	S-T: Restore outward appearance of ranch house. L-T: Replace the missing barn with a structure that is of compatible form and character that protects key pieces of working/restored equipment from the elements and supports other ranch needs. L-T: Repair/restore missing ranch features like the Joshua Tree sculpture.	Same as Alternative 3	L-T: Increase Ranch House accessibility and compliance with current building codes. Make the building structurally sound to allow interior visits by public.
Inventory	Continue to inventory ranch resources as opportunities arise.	*Inventory and document remaining historic cultural resources*	Same as Alternative 1	S-T: Complete CLI for mining (all sites related to Keys Ranch).	Same as Alternative 3 plus: L-T: Complete CLI for Wall Street and the Desert Queen Mine	Same as Alternatives 3 and 4
Monitoring	Incidental (non systematic) monitoring of Keys Ranch resources. Analyze building conditions as needed and after storms.	*Systematically conduct conditions surveys for buildings and structures associated with the Keys Ranch.*	Same as Alternative 1	Develop and conduct a regular monitoring conditions survey.	Same as Alternative 3	Same as Alternative 3
Research	Continue to facilitate research as opportunities arise.	---	Same as Alternative 1 S-T: Conduct historic preservation workshops. Involve the communities of the Morongo Basin, as well as county, state and nationwide volunteers.	Same as Alternative 2 plus: L-T: Complete CLR for the ranch core area.	Same as Alternative 2 plus: L-T: Complete CLR for the larger district.	Same as Alternatives 3 and 4
Non-contributing Structures and Objects [See also Park Operations for Non-contributing Buildings]	Continue to maintain non-contributing elements (outhouse, water tank, etc.).	*Remove or enhance compatibility of non-contributing elements.*	Restore Keys Ranch setting (by removing non-contributing elements) as they deteriorate and as time and funding permit.	Remove, disguise, and/or relocate/reconstruct non-contributing elements.	Same as Alternative 2	Same as Alternative 3
Access to Buildings / Housekeeping	Maintain outside-in views of Keys Ranch interiors.	*Allow visitors an opportunity to experience*	Use photographs to show former interiors and other	Same as Alternative 2 plus:	Same as Alternative 2	S-T: Same as Alternative 3

	Alternative 1: No Action Continue Current Management	*Actions Common to All Action Alternatives (2-5)*	Alternative 2: Minimum Action	Alternative 3: Moderate (Inward Focus) [Preferred]	Alternative 4: Moderate (Outward Focus)	Alternative 5: Maximum
		accessing buildings through means appropriate to the alternative.	missing features. Increase housekeeping to allow visitors to peer in through clean windows at a clean interior (Ranch House and other buildings as appropriate). Consider placing a step stool, as appropriate, to enable young visitors to more easily view interiors.	L-T: Explore opportunities to stabilize and open portions of the various buildings on the ranch to visitors (including roped areas at entrances in lieu of allowing tours through the buildings).		L-T: Restore buildings to accommodate inside tours of structures.
Landscape						
	Continue to maintain existing elements of historic landscape. Ensure that the addition of new features or repair of existing features does not contribute to loss of integrity.	*Identify and maintain the historic landscape to ensure no additional loss of character-defining features.*	Same as Common to All.	Same as Alternative 1	Same as Alternative 1	Remove intrusions on historic scene – consider views from Barker Dam, Wall Street Mill, views into and out of Ranch, views into and out of dams, as well as linkages to Keys View.
Historic Vegetation (including Orchard) [See also Vegetation under Natural Resources below.]	Maintain remaining historic vegetation features to ensure protection and preservation (remove invasive exotics). Continue to maintain historic and non-historic plantings in orchard.	*Manage native, historic native and nonnative vegetation to avoid damage to structures from vegetation encroachment.*	Same as Alternative 1 S-T: Clear the former garden area and use photographs to allow visitors to envision its historic use and appearance.	Same as Alternative 2 plus: Develop a vegetation management plan for the ranch. Consider restoring missing historic vegetation according to documentation (cottonwoods by house, cypress, pine etc.). Explore options for restoring a portion of the orchard to include representative examples of historically used orchard species and back-up genetic stock for replacing existing historic trees. Remove (but retain elsewhere in the park) non-historic plantings in orchard.	Same as Alternative 1	Same as Alternative 3 plus: L-T: Conduct comprehensive restoration of historic vegetation (including orchard, garden and representative agricultural areas.

	Alternative 1: No Action Continue Current Management	***Actions Common to All Action Alternatives (2-5)***	**Alternative 2: Minimum Action**	**Alternative 3: Moderate (Inward Focus) [Preferred]**	**Alternative 4: Moderate (Outward Focus)**	**Alternative 5: Maximum**
Museum Collections						
Museum Objects	Implement recommendations of Museum Management Plan for Keys Ranch resources. Ongoing management of existing museum collections according to Museum Management Plan/Scope of Collections Statement.	*Preserve Keys Ranch museum collections.*	Same as Alternative 1	S-T Canvas Twentynine Palms, Joshua Tree and vicinity for objects associated with the Keys Ranch for information, use (as appropriate or acceptable to owner), collaborative museum display with partners such as the Twentynine Palms Historical Society.	Same as Alternative 3	Same as Alternative 3 plus: L-T: Accession and conduct comprehensive curation of museum objects associated with Keys Ranch.
Exhibits	Continue to exhibit Keys Ranch objects in park visitor center(s).		Seek out and take advantage of additional opportunities to exhibit objects from the Keys Ranch collections.	Same as Alternative 3 plus: L-T: Develop exhibit plan for proposed new visitor center focusing on human history, especially that of Native Americans and Keys Ranch.	L-T: Place more Keys "stuff" on display by establishing relationships with local community museums, university museums, special exhibits, traveling exhibits.	Same as Alternatives 3 and 4
Oral Histories	Maintain existing oral histories.	*Preserve existing oral histories by creating transcripts and back-up copies.*	Review and supplement oral histories	S-T: Immediately following plan approval, systematically and in collaboration with local historical societies, identify and conduct oral histories with people within Twentynine Palms and vicinity who have personal stories regarding Keys Ranch.	Same as Alternative 3	Same as Alternative 3
Historic (Non-museum) Collection						
Non-museum objects	Continue to explore use and preservation of objects as time and money permit. Continue to maintain representative objects used to make looking in through the windows of buildings interesting. Conduct preservation maintenance actions to restore the use of the "back cracker" and to keep the	*Continue to display representative non-collection items at the Keys Ranch.* *Maintain some Keys Ranch equipment in working order.* *Secure industrial curator to identify priority objects for preservation and treatment.*	As opportunities arise, curate additional objects. Identify priority items that have unique value. Focus maintenance and preservation on these items. Curate priority objects as recommended by industrial curator	S-T: Restore selective equipment to working condition – priority to objects that have recently been operable. L-T: Upon consultation with applicable experts, move on to restoration of additional equipment and objects desired for interpretive program demonstration as community outreach program develops.	Same as Alternative 3	Same as Alternative 3 plus: L-T: Return all major equipment to operating condition.

	Alternative 1: No Action Continue Current Management	*Actions Common to All Action Alternatives (2-5)*	Alternative 2: Minimum Action	Alternative 3: Moderate (Inward Focus) [Preferred]	Alternative 4: Moderate (Outward Focus)	Alternative 5: Maximum
	washing machine, rock drill and other usable equipment in working order.					
Irrigation System	Allow no additional deterioration of irrigation system components.	*Maintain irrigation system components.*	Investigate feasibility of restoring irrigation system to maintain landscape setting and/or to eliminate intrusion of new water tanks on site.	L-T: Restore the windmill water and irrigation operations. Use the water for orchard maintenance and operations.	Conduct comprehensive restoration of irrigation system.	Obtain demonstration equipment.
Mills (Arrastra, One Stamp Mill, Chilean Mill Ruin, Huntington Mill, Adobe Hopper, Pug Mill)	Allow no additional deterioration of mills.	*Determine feasibility of stabilizing mills.*	Stabilize and repair mills.	L-T: Consider restoring pug mill, one stamp mill or Chilean mill, a demonstration arrastra, food preparation (canning of orchard fruits).	L-T: Obtain portable demonstration mills for use in offsite special events.	Same as Alternatives 3 and 4
Archeological Resources						
	Continue to encourage additional inventory and monitoring of archeological resources at Keys Ranch and associated sites as opportunities arise.	*Conduct additional inventory and monitoring of historic and prehistoric archeological resources at Keys Ranch and associated sites.* *Document results of archeological site testing.* *Stabilize known archeological sites in vicinity of Keys Ranch.*	Properly record known resources to modern standards	Conduct archeological site testing at other areas of significance associated with the Keys Ranch.	Same as Alternative 3 plus: Seek additional opportunities to investigate archeological resources with local universities.	Same as Alternative 3
Ethnographic Resources						
	Continue to inventory and document ethnographic sites as they are identified. Continue to allow repatriation of ethnographic resources by local Native American Indian communities as applicable.	*Inventory, document and preserve ethnographic resources as they are identified.*	Same as Alternative 1	Same as Alternative 1	Systematically identify ethnographic resources associated with Keys Ranch and vicinity.	Same as Alternatives 1 and 4
NATURAL RESOURCES **Goal:** *Perpetuate natural processes where consistent with proposed management of Keys Ranch and vicinity.*						
Boundary Closure	Retain existing	*Retain restricted access to*	Same as Alternative 1	Retain Ranch closures	Same as Alternative 3	Same as Alternative 3

	Alternative 1: No Action Continue Current Management	*Actions Common to All Action Alternatives (2-5)*	Alternative 2: Minimum Action	Alternative 3: Moderate (Inward Focus) [Preferred]	Alternative 4: Moderate (Outward Focus)	Alternative 5: Maximum
	administrative boundary closure.	*sensitive, rare, threatened and endangered species.*		where needed for resource protection. Explore reducing the size of the Keys Ranch Administrative Closure to minimum necessary to protect resources.		
Vegetation [See also Historic Vegetation under Cultural Resources above.]	Continue to remove non-native invasive plants.	*Systematically inventory and implement removal of non-native invasive plants.*	Same as Alternative 1	S-T: Same as Alternative 1 L-T: To minimize spread of non-native invasive plants, restore denuded sites, not being managed as part of the Historic District, to native desert vegetation.	Same as Alternative 1	Same as Alternative 3
Rare Species	Continue to inventory and monitor populations of rare plants, desert bighorn sheep and desert tortoises as well as other key species at the Keys Ranch and associated sites.	*Same as Alternative 1*	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
Use of Native Materials	Continue to approve use of native materials on a case-by-case basis.	*L-T: Develop guidelines for collection and use of natural materials to aid in preservation of Ranch resources – for example, Joshua Tree Fence.*	Same as Common to All	Same as Common to All	Same as Common to All	Same as Common to All
Pest Management	Address pest management on a case-by-case basis.	*L-T: Develop and implement an Integrated Pest Management Plan for Keys Ranch.*	Same as Common to All	Same as Common to All	Same as Common to All	Same as Common to All
INTERPRETATION AND VISITOR EXPERIENCE						
Goal	Provide __ percent of park visitors with an opportunity for a Keys Ranch experience.	*Visitors to the park leave with an understanding of the history of the park.*	Provide 25 percent of park visitors with an opportunity for learning about the Keys Ranch resources.	Provide 50 percent of park visitors with an opportunity to experience the Keys Ranch resources.	Same as Alternative 3	Most visitors leave the park with an understanding of the Keys Ranch and historic issues.
Interpretation						
Interpretation – Programming	S-T: Continue current interpretive programming (guided tours and curriculum-based education	*Expand interpretive and educational programming operations.*	S-T: Same as Alternative 1 S-T: Encourage music / drama / history students at	S-T: Same as Alternative 2 L-T: As equipment is restored, community	S-T: Same as Alternative 2 L-T: Physically and interpretively link the	S-T: Same as Alternative 3 L-T: Visitors would observe and possibly assist in the

	Alternative 1: No Action Continue Current Management	*Actions Common to All Action Alternatives (2-5)*	Alternative 2: Minimum Action	Alternative 3: Moderate (Inward Focus) [Preferred]	Alternative 4: Moderate (Outward Focus)	Alternative 5: Maximum
	program).		local college and/or art and theatre venues to develop a play or musical dramatization of the Keys story. Consider using a local civic group to offer a monetary award. L-T: Expand interpretive programming by offering occasional specialized tours during peak periods. For example: Offer an Adobe tour, including Ryan Ranch and Keys Ranch and other applicable sites (demonstration of Adobe hopper).	partnerships are established and better site preservation ensues, expand interpretive opportunities to offer an increasing spectrum of activities over time. For example, offer demonstration tours as Keys Ranch equipment is restored to working order. L-T: Increase opportunities to tell the natural resources (focus on what brought Keys to the desert and what helped him to prosper) and Native American (history of area use) stories. L-T: Begin to conduct historic mining tours at a sequence of Keys Ranch sites, including Ranch visits to the arrastra, one-stamp mill, Huntington Mill, Desert Queen Mine and Wall Street Mine as equipment is restored.	various Keys sites including the Barker Dam, Cow Camp, Keys Ranch and the Wall Street Mine and Desert Queen Mine. L-T: Develop thematically linked guided tours. Mining Tour could include visit to Wall Street Mill, Desert Queen Mine and then Keys Ranch. Adobe Tour could include visits to Ryan Ranch and Keys Ranch and demonstration of adobe hopper. L-T: Expand other linkages to Keys in the Barker Dam area by developing Keys Ranch Interpretive Kiosk (telling stories of Wall Street Mill, Barker Dam, Cabin, Disney–Keys relationship, etc.)	demonstration of working representations of tools and equipment used at the ranch. L-T: Develop the following interpretive programming: * Self-guided Tours (for related Keys Ranch sites) * Community Programs (on and offsite) * Shuttle Van Tours * Satellite Visitor Center Programs L-T: Offer a wide variety of specialized interpretive programs, such as: * Orientation Tours * Curriculum-based Educational Programs * Mining Site Tours * Homestead Operations Tours * Native American Culture and History Tours Conduct guided tours of the Ranch House interior (smaller tour group size).
Interpretation – Kind and Frequency of Tours	Continue to guide reservation-only tours during primary visitor use season of the Keys Ranch as funding permits. Continue to conduct specialized tours on request as funding and staffing permit.	*Increase the number of visitors who have an opportunity to experience Keys Ranch resources.*	Same as Alternative 1 plus: permanently fund basic guided tour operation.	Same as Alternative 2 plus: S-T: Increase frequency of guided tours. L-T: Experiment with limited (monitored) self-guided tours (of Keys Ranch)		
Interpretation – Curriculum-based Education	Continue to conduct curriculum based education program at Keys Ranch. Continue to involve the Desert Institute, local historical societies and	Same as Alternative 1	Same as Alternative 1	S-T: Same as Alternative 1 L-T: Expand curriculum-based educational program to include additional focus themes.	S-T: Same as Alternative 1 L-T: Develop offsite curriculum-based program.	Same as Alternative 3 and 4.

	Alternative 1: No Action Continue Current Management	*Actions Common to All Action Alternatives (2-5)*	Alternative 2: Minimum Action	Alternative 3: Moderate (Inward Focus) [Preferred]	Alternative 4: Moderate (Outward Focus)	Alternative 5: Maximum
	colleges as appropriate.					
Availability of Information – Non-Personal (Printed)	Continue to sell current materials (books, video, guide).	*Increase availability of written materials about Keys Ranch.* *L-T: Secure another publisher for/make Willis Keys' book available again.*		S-T: Publish a schedule of Keys Ranch themed experiences (tours, educational program, campfire programs) and other applicable park sites. S-T: Publish a list of Keys Ranch tour sites (road tour brochure) including where Keys went in Banning, visits to local historical societies containing Keys objects, etc. L-T: Develop self-guided tour brochures (for Keys Ranch and Keys related sites outside the Historic District). L-T: Publish a series of interpretive brochures on different aspects of Keys Ranch (mining, homesteading, horticulture/farming, family lifestyle, etc.)	Same as Alternative 3	Same as Alternative 3 plus: L-T: Increase publications, including media (newspaper and magazine articles), brochures and maps on Keys Ranch.
Availability of Information – Non-Personal (Exhibit)	Continue to maintain existing waysides (along the road) and self-guided trail sign (at Barker Dam) that relate to the Keys Ranch.	---	Same as Alternative 1	Develop a thematic wayside exhibit plan to link Keys Ranch sites throughout the park and community.	Same as Alternative 3	Same as Alternative 3
Availability of Information – Personal (Demo/Exhibit)	Continue to demonstrate use of working equipment (washing machine, rock drill, water pump, back cracker) at Keys Ranch. Continue to describe use of non-operable equipment (arrastra, pug mill, one stamp mill, etc.).	*Preserve and maintain historic objects as needed for Ranch tours and demonstrations.*	Same as Alternative 1	Same as Alternative 1 plus: Demonstrate use of additional equipment as it becomes available/is restored. Take Keys Ranch historic objects to public events for demonstrations. Identify other opportunities to interpret Keys Ranch at other park sites (Keys View,	Same as Alternative 3	Same as Alternative 4

	Alternative 1: No Action Continue Current Management	*Actions Common to All Action Alternatives (2-5)*	Alternative 2: Minimum Action	Alternative 3: Moderate (Inward Focus) [Preferred]	Alternative 4: Moderate (Outward Focus)	Alternative 5: Maximum
				etc.)		
Availability of Information -- Media	Continue to allow 1970s era film on Keys Ranch to be shown upon request.	---	Same as Alternative 1 plus: Develop new media exhibits as time and funding allow.	S-T: Same as Alternative 2. L-T: Develop General Orientation Film	Same as Alternative 3	Same as Alternative 3 plus: L-T: Develop a series of in-depth films and/or brochures – on Native Americans, Family history, Mining, etc. L-T: Create a computerized "virtual tour" of the Keys Ranch.
Visitor Information Center	Continue to exhibit museum collections associated with the Keys Ranch at the main park visitor center.	---	Same as Alternative 1	Add additional exhibits on Ranch resources to existing facilities.	Develop a visitor information station (e.g. sheltered panels) at Barker Dam that lays out the Keys story.	Construct small visitor contact facility (adobe, no HVAC, small "primitive" office) at the Cow Camp parking area gate.
Visitor Access and Circulation						
Parking	Continue to maintain internal parking area	---	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	L-T: Relocate parking area from within Historic District and restore site. L-T: Remove the parking area at Cow Camp and gate the road near Barker Dam.
Accessibility	Continue to facilitate accessible tours of Keys Ranch.	*Take advantage of opportunities to increase accessibility of Keys Ranch Resources.*	Same as Alternative 1	Same as Alternative 1	Increase accessibility of Ranch House.	Increase accessibility of open buildings and structures.
Transportation	Continue to facilitate guided carpool to Keys internal parking area.	---	Same as Alternative 1		Consider offering public transportation options (e.g. van shuttles from Visitor Center).	Offer alternative transportation options to Keys Ranch (such as restored wagon tours and/or shuttles).
Roads and Trails	Continue to use existing access roads and trails.	*Use historic roads and trails for access, minimizing any new non-contributing additions to the historic district.*	Same as Common to All	Same as Common to All	S-T: Same as Common to All L-T: Connect Barker Dam, Wall Street Mine, Desert Queen Mine and the Keys Ranch (seasonal) through a system of trails. L-T: Construct new trails linking site with other Keys Ranch sites and Joshua	Same as Alternative 4 plus: L-T: Re-use historic entrance to site. L-T: Upgrade the road (without paving) to accommodate shuttle vans.

	Alternative 1: No Action Continue Current Management	*Actions Common to All Action Alternatives (2-5)*	Alternative 2: Minimum Action	Alternative 3: Moderate (Inward Focus) [Preferred]	Alternative 4: Moderate (Outward Focus)	Alternative 5: Maximum
					Tree.	
Fencing	Maintain existing fences and gates.	*Maintain historic fencing alignments.*	Same as Common to All	Same as Common to All	Same as Common to All	Consider modifying internal and external non-historic fencing to support proposed operations.
Tour Staging	Continue to stage guided tours out of Cow Camp Parking Area and internal ranch center parking area.	---	Same as Alternative 1	Same as Alternative 1	S-T: Same as Alternative 1 L-T: Use the Barker Dam as an all-season visitation site where you find out about the Keys story. L-T: Conduct guided tours beginning from different Keys Ranch sites (experiment with starting at Barker Dam).	Same as Alternative 4 plus: L-T: Relocate Cow Camp Staging Area to Barker Dam
PARTNERSHIPS						
Staffing and Funding	The park would continue to rely on existing funding and staffing to support Keys Ranch operations.	*Seek new sources of funding and staffing to support Keys Ranch operations.*	The park would seek additional internal sources of staffing and funding to support Keys Ranch operations.	The park would seek additional internal and external sources of staffing and funding to support Keys Ranch operations.	The park would explore ways to collaborate for interpretation and management of the site (on-site presence, interpretation, vegetation management, equipment management, etc.).	The park would seek both additional staffing and funding and collaborative partnerships to support Keys Ranch operations.
Caretakers	Continue to recruit volunteer residential caretakers and to support community partnerships to manage the Ranch.	*L-T: Hire an NPS Partnership or Volunteer Coordinator to support development of partnership efforts with local communities and organizations.*	Same as Alternative 1	Same as Alternative 1 plus: Hire a maintenance worker or interpreter/caretaker to provide security and surveillance for Keys Ranch.	Same as Alternative 1, plus: L-T: Focus on getting local groups to help manage the Keys Ranch to maintain and enhance local interest/involvement in the preservation of the site. L-T: If year-round caretaker cannot be obtained, develop short-term caretaker program from amongst community partnerships.	Same as Alternative 3
Restoration		*Seek partnerships within*	Seek relationships with	Develop strong partnerships		

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		local community and beyond, as well as with groups of experts with experience related to preserving the kinds of objects and structures related to the Keys Ranch.	mining interest groups and other experts on late 19th century and early 20th century mining for restoration of equipment.	with local communities. Explore opportunities to partner with local historical societies, preservation groups, 4H-type organizations, and local business interests that could support the restoration of specific pieces of equipment on site. L-T: Use other organized groups, Elderhostel courses, researchers, adult education groups etc. to restore the Ranch under the direction of expertise gained from developing relationships with specialists.		
Interpretive Programming		---		Partner with the Desert Institute to offer extended interpretive opportunities and workshops.	Tell an expanded/integrated Keys Ranch story by utilizing local historical societies, museums, and other organizations.	Develop partnership and funding opportunities to augment enhanced Keys Ranch operations.
Research		---		Develop research partnerships with educational institutions (Redlands University, local community colleges, etc.) to further explore the historical context of Keys Ranch.	Same as Alternative 4	
PARK OPERATIONS						
Administration						
Goal	Continue to maintain current level of operations at Keys Ranch.	*Establish and maintain park operations necessary to implement desired conditions.*	Same as Common to All	Same as Common to All	Same as Common to All	Facilitate coordinated approach to implementation of proposed actions by establishing Keys Ranch "stewardship team" comprised of staff from each division in the park.
Operations Funding / Implementation	Continue to focus on preservation efforts using	*Establish funding mechanism to continue*	Same as Common to All	Same as Common to All	Same as Common to Al	Same as Common to All

	Alternative 1: No Action Continue Current Management	***Actions Common to All Action Alternatives (2-5)***	**Alternative 2: Minimum Action**	**Alternative 3: Moderate (Inward Focus) [Preferred]**	**Alternative 4: Moderate (Outward Focus)**	**Alternative 5: Maximum**
	specialized funding sources.	*interpretive and educational programming.* *Develop a line item project list of every aspect of implementation. Immediately following approval of the plan, prioritize preservation and maintenance on a case-by-case basis.*				
		Seek new funding sources and/or cooperative partnerships to preserve Keys Ranch resources.	Same as Common to All	Same as Alternative 2	Same as Common to All	Same as Common to All
Caretaker Site	Same location	*Enhance compatibility of non-contributing elements.*	Restore Keys Ranch setting by modifying or relocating non-contributing elements as they deteriorate and as time and funding permit.	Same as Alternative 2	Same as Alternative 2	L-T: Relocate caretaker site and restore existing site
Radio Tower	Same location	*Relocate radio tower out of Historic District if possible.*	Same as Common to All	Same as Common to All	Same as Common to All	Same as Common to All
Vault Toilet	Same location	*Remove or enhance compatibility of non-contributing elements.*	Same as Common to All	Same as Common to All	Same as Common to All	L-T: Relocate vault toilet and restore existing site.
Dams	Maintain some water capacity in reservoirs (recognizing seasonality of resource and safety).	*Investigate the feasibility of Preliminary Alternatives for Keys Ranch dams. Implement BOR recommendations, including a Keys Ranch Dam monitoring plan.*	Conduct regular monthly inspections of the dams and as needed inspections following storms. Keys: Maintain reduced water level. Barker: Maintain for recreational / scenic value. Seasonal closure if needed during high water. Cow Camp: Preservation maintenance until failure	Same as Alternative 2 plus: Keys: Limit water holding volume and consider connecting to irrigation system for orchard and onsite water storage Barker: Limit holding volume of water for recreational/scenic value. Seasonal closure if needed during high water. Cow Camp: Preservation maintenance until failure	Same as Alternative 3 except: Barker: Consider replacing feeder pipe to watering trough.	Secure funding to repair and rehabilitate the Keys Ranch dams (3 at the Ranch, Cow Camp Dam and Barker Dam) to original capacity and to the Secretary of the Interior's Standards.
Maintenance Staging	Continue to use non-historic shed near caretaker's trailer site and other areas hidden from	---	Consider reutilizing a portion of the Equipment Shed for storage of additional materials needed	Develop adequate maintenance support facilities and storage to support proposed	Same as Alternative 3	Same as Alternative 3

	Alternative 1: No Action Continue Current Management	*Actions Common to All Action Alternatives (2-5)*	Alternative 2: Minimum Action	Alternative 3: Moderate (Inward Focus) [Preferred]	Alternative 4: Moderate (Outward Focus)	Alternative 5: Maximum
	view in the Ranch area to stage maintenance equipment. Continue to transport equipment not available at the Ranch.		for maintenance of the Ranch.	operations.		
Fire Management						
	Adopt recommendations of Fire Management Plan.	*Adopt recommendations of Fire Management Plan.* *Use recently completed plan as a catalyst for an improved fire management strategy at the Keys Ranch.* *Identify and ensure some level of structural and wildland fire fighting resources/response in vicinity of Keys Ranch.* *Develop structural fire protection strategy for vulnerable resources at Keys Ranch (protection from ignition sources – lightning, wildland fire, arson, physical modifications to environment – defensible space, appropriate equipment onsite).*	Common to All plus: L-T: Implement vegetation setbacks and/or irrigation to increase fuel moisture to support fire management objectives.	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2 plus: L-T: Install high pressure (HPM) fire suppression system as appropriate for structures.
Maintenance						
Goal	Continue to stabilize, repair, and/or rehabilitate buildings and structures as funding and staffing permit.	*Maintain facilities, infrastructure and ranch setting in good condition.*				Stockpile "historic" building materials (wood, Joshua trees, etc.).
Cyclic Maintenance	Continue to implement cultural and natural resources recommendations for preservation of the Keys Ranch. Continue to focus preservation efforts, as needed, on high priority	*Develop cyclic maintenance plans for all buildings and structures and natural resource features.* *Develop and implement phased priority restoration/maintenance plans.*	Same as Common to All	Same as Common to All	Same as Common to All	Same as Common to All

	Alternative 1: No Action Continue Current Management	*Actions Common to All Action Alternatives (2-5)*	Alternative 2: Minimum Action	Alternative 3: Moderate (Inward Focus) [Preferred]	Alternative 4: Moderate (Outward Focus)	Alternative 5: Maximum
	structures (minimum preservation maintenance actions). Replace roofing, siding and other features as they deteriorate or as special requests for cyclic maintenance funding are granted.	*Conduct routine cyclic maintenance to replace building materials as needed.*				
Staff Expertise	Continue to encourage staff to obtain skills and equipment needed to maintain Keys Ranch.	---	Same as Alternative 1	Rely on staff as well as partnerships to contribute expertise to restoration efforts.	Increase staff expertise in or access to (within community) all applicable construction trades.	Facilitate development of enhanced maintenance skills to support management of Ranch and associated sites through training, cross-training and details and by establishing partnerships with specialized preservation groups.
Security						
Goal	Secure the Keys Ranch from further deterioration and vandalism.	---	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
Surveillance	Continue to recruit volunteer caretakers for the Keys Ranch.	---	Explore options for technological monitoring and alarms to enhance protection of the Keys Ranch.	Same as Alternative 2	Consider implementing comprehensive electronic surveillance including installation of power, if needed.	Same as Alternative 4
Staffing	Continue to maintain a periodic staff presence at the Ranch.	*Maintain day use only (restricted) operations.*	Increase frequency of staff presence at Ranch.	Same as Alternative 2	Provide for a 24/7, 365 days on-site steward or caretaker presence.	Same as Alternative 4
Presence	Continue to conduct regular patrols of the Ranch.	---	Same as Alternative 1	Same as Alternative 1	Consider constructing site manager residence outside of historic district.	Same as Alternative 4
Safety						
Operations	Continue to respond to safety issues associated with Ranch management as a high priority.	*Increase safety of operations at Keys Ranch through implementation of staff and volunteer training, tailgate safety sessions and systematic analysis of operations.*	Same as Common to All	Same as Common to All	Same as Common to All	Same as Common to All

	Alternative 1: No Action Continue Current Management	***Actions Common to All Action Alternatives (2-5)***	**Alternative 2: Minimum Action**	**Alternative 3: Moderate (Inward Focus) [Preferred]**	**Alternative 4: Moderate (Outward Focus)**	**Alternative 5: Maximum**
Hazardous Materials (Mine Tailings)	Continue to investigate hazardous materials as appropriate at Keys Ranch.	*Determine need for and conduct hazardous materials surveys at the Keys Ranch. Implement recommendations as required under applicable policy and law.* *Follow existing preliminary investigation report recommendations.*	Same as Common to All	Same as Common to All	Same as Common to All	Same as Common to All

III. IMPACT TOPICS

Specific impact topics were developed to address potential natural, cultural, recreational and park operations impacts that might result from the proposed Alternatives as identified by the public, NPS, and other agencies, and to address federal laws, regulations and orders, and NPS policy. A brief rationale for the selection or non-selection of each impact topic is given below.

Impact Topics Analyzed

Impacts of the alternatives on the following topics are presented in this Environmental Assessment: soils, water resources, vegetation, wildlife, special status species, prehistoric and historic archeological resources, ethnographic resources, historic structures/cultural landscapes, museum collections, visitor experience and interpretation, wilderness, and park operations.

Geology/Soils: *Management Policies* (NPS 2001A) require the NPS to understand and preserve and to prevent, to the extent possible the unnatural erosion, physical removal, or contamination of the soil or alteration of geological resources. Soil and geology could be disturbed from actions proposed by the alternatives in this Environmental Assessment.

Water Resources, including Wetlands and Water Quality: The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters, to enhance the quality of water resources, and to prevent, and control, and abate water pollution. NPS *Management Policies* provide direction for the preservation, use, and quality of water in national parks. Quality and quantity of both ground and surface water remain a point of concern in the high desert environment that encompasses Joshua Tree National Park. Naturally occurring surface water is rare in the park. There are more than 120 known water sources, including springs, seeps, wells, and one short perennial stream. There are springs, tanks, seeps and wells within the Keys Ranch area.

> **Water Quality**: Section 401 of the *Clean Water Act* as well as NPS policy requires analysis of impacts on water quality.
>
> **Wetlands**: Executive Order 11990 requires that impacts to wetlands be addressed. The development of the Keys Ranch was made possible by the location of the site near several natural tanks, seeps and springs.
>
> **Water Quantity:** The increased/decreased use of water proposed by some alternatives to provide for ranch operations could affect other park resources.
>
> **Floodplains:** Executive Order 11988 (Floodplain Management) requires an examination of impacts to floodplains and potential risk involved in placing facilities within floodplains. NPS Management Policies, DO- 2 (Planning Guidelines), and DO- 12 (Conservation Planning, Environmental Impact Analysis, and Decision Making) provide guidelines for proposals in floodplains. Executive Order 11988 requires that impacts to floodplains be addressed. As has been demonstrated by various improvements in the vicinity of the Ranch House, portions of the Keys Ranch may be located within the floodplain of the drainages from the upper, middle and lower Keys Dams.

Vegetation: The *National Environmental Policy Act* (NEPA) calls for examination of the impacts on the components of affected ecosystems. NPS policy is to protect the natural abundance and diversity of park native species and communities, including avoiding, minimizing or mitigating potential impacts from proposed projects.

Wildlife: The *National Environmental Policy Act* (NEPA) calls for examination of the impacts on the components of affected ecosystems. NPS policy is to protect the natural abundance and diversity of park native species and communities, including avoiding, minimizing or mitigating potential impacts from proposed projects.

Rare, Threatened and Endangered Species: The *Endangered Species Act* (ESA) requires an examination of impacts to all federally listed threatened or endangered species. NPS policy also requires an analysis of impacts to state- listed threatened or endangered species and federal candidate species. Under the ESA, the NPS is mandated to promote the conservation of all federal threatened and endangered species and their critical habitats within the park boundary. Management Policies include the additional stipulation to conserve and manage species proposed for listing. Ongoing informal consultation with the U.S. Fish and Wildlife Service, and California Department of Fish and Game (Natural Diversity Database) has identified several important rare, threatened and endangered species that occur in Joshua Tree National Park.

Prehistoric and Historic Archeological Resources: Conformance with the *Archeological Resources Protection Act* in protecting known or undiscovered archeological resources is necessary. There are numerous archeological sites in and near Keys Ranch.

Ethnography: Joshua Tree National Park and the surrounding area have a long history of use by prehistoric and contemporary Native Americans. Analysis of impacts to known resources is important under the *National Historic Preservation Act* and other laws. The National Park Service defines ethnographic resources as any "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (DO- 28, *Cultural Resource Management Guideline*, p. 181). While appropriate steps would be taken to protect any human remains, funerary objects, sacred objects, or objects of cultural patrimony inadvertently discovered, ethnographic resources were retained as an impact topic because reburial has been an issue near Keys Ranch.

Historic Structures/Cultural Landscapes: Consideration of the impacts to cultural resources is required under provisions of Section 106 of the *National Historic Preservation Act of 1966*, as amended, and the 1995 *Programmatic Agreement among the National Park Service, the National Conference of State Historic Preservation Officers, and the Advisory Council on Historic Preservation*. It is also required under *Management Policies* (NPS 2001A). Federal land management agencies are required to consider the effects proposed actions have on properties listed in, or eligible for inclusion in, the National Register of Historic Places (i.e., Historic Properties), and allow the Advisory Council on Historic Preservation a reasonable opportunity to comment. Agencies are required to consult with federal, state, local, and tribal governments/organizations, identify historic properties, assess adverse effects to historic properties, and negate, minimize, or mitigate adverse effects to historic properties while engaged in any federal or federally assisted undertaking (36 CFR Part 800).

Museum Collections: Requirements for proper management of museum objects are defined in 36 CFR 79 and promulgated in the NPS Museum Handbook. Management Policies (NPS 2001A) and other cultural resources laws identify the need to evaluate effects on National Park Service Collections as applicable. Some items from Keys Ranch that are in the Joshua Tree National Park collection have been used for documentation of resources, historic research and exhibit. Until adequately documented, the Keys material will continue to have the potential to yield additional items and information for the park collections as a whole.

Interpretation and Visitor Experience: Providing for visitor enjoyment is one of the fundamental missions of the NPS, according to the Organic Act of 1916 and Management Policies (NPS 2001A). Dependent on the selected alternative, a variety of impacts to visitor use and/or interpretive programming may occur.

Wilderness: NPS wilderness management policies are based on provisions of the 1916 NPS Organic Act, the 1964 Wilderness Act, and legislation establishing individual units of the National Park System. Joshua Tree National Park is a unit of the National Wilderness Preservation System, a site designated by Congress and legally protected as wilderness in perpetuity. NPS and National Wilderness Preservation System policies establish

consistent direction for the preservation, management, and use of wilderness and prohibit the construction of roads, buildings and other man- made improvements and the use of motorized vehicles in wilderness. All park management activities proposed within wilderness are subject to review following the minimum requirement concept and decision guidelines. The public purpose of wilderness in national parks includes the preservation of wilderness character and wilderness resources in an unimpaired condition, as well as for the purposes of recreational, scenic, scientific, education, conservation, and historical use. While most of the Keys Ranch is outside of designated wilderness, portions of related properties are in or near wilderness.

Park Operations: Impacts to park operations and visitor services are often considered in Environmental Assessments to disclose the degree to which proposed actions would change park management strategies and methods.

Impact Topics Dismissed from Further Consideration

The topics listed below either would not be affected or would be affected only negligibly by the alternatives evaluated in this Environmental Assessment. Therefore, these topics have been dismissed from further analysis. Negligible effects are localized effects that would not be detectable over existing conditions.

Air Quality: Joshua Tree National Park is in a mandatory class I airshed under the Clean Air Act (1977). Class I areas are afforded the highest degree of protection under the Clean Air Act. This designation allows very little additional deterioration of air quality. The Clean Air Act states that park managers have an affirmative responsibility to protect park air quality related values (including visibility, plants, animals, soils, water quality, cultural resources and visitor health) from adverse air pollution impacts. Special visibility protection provisions of the Clean Air Act also apply to class I areas, including new national rules to prevent and remedy regional haze affecting these areas. Under existing visibility protection regulations, the NPS identified "integral vistas" that are important to the visitor's visual experience in NPS class I areas, and it is NPS policy to protect these scenic views. Short- term impacts from construction activities would include emissions from vehicles and generation of fugitive dust; however, the use of a palliative would minimize the dust. The alternatives considered would not have other than negligible impacts on air quality so this topic was dismissed from further analysis.

Geologic Hazards/Geothermal Resources: *National Park Service Management Policies* (NPS 2001A) call for analysis of geological hazards should they be relevant. There would, however, be no known effects to these resources from the proposed actions described in this Environmental Assessment therefore this topic was dismissed from further consideration.

Socioeconomics: Tourism associated with Joshua Tree National Park, currently averaging 1.25 million visitors each year, is economically important to the communities surrounding the park. The local economy and most businesses within the communities adjacent to the park are based on professional services, construction, tourism, light industry, and a local military installation. Hotels, restaurants, grocery stores, and specialty shops cater to the different users of the park, including rock climbers, sightseers, campers, and equestrians. Should one of the alternatives be implemented, the local and regional economy would realize short- term economic benefits from construction related expenditures. With 270 miles of trails and trail corridors already utilized by park visitors, the impact of this implementation would not significantly affect the visitation to Joshua Tree National Park; therefore, socioeconomic issues will not be evaluated further in this Environmental Assessment.

Environmental Justice: Executive Order 12898 "General Actions to Address Environmental Justice in Minority Populations and Low- Income Populations" requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low- income populations and communities. This Executive Order does not apply to the subject of this Environmental Assessment. The actions evaluated in this Environmental Assessment would not adversely affect socially or economically disadvantaged populations.

Prime and Unique Farmlands: No unique agricultural soils are believed to exist in Joshua Tree National Park.

National Wild and Scenic Rivers: The National Wild and Scenic Rivers Act requires analysis of impacts to designated, eligible or proposed National Wild and Scenic Rivers. There are no designated, eligible or proposed wild and scenic rivers in Joshua Tree National Park therefore this topic has been dismissed from further analysis.

Indian Trust Resources: Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental document s. T he federal Indian t rust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. There are no Indian trust resources in Joshua Tree National Park. The lands comprising the park are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Therefore, Indian Trust Resources were dismissed as an impact topic.

Scenic Values: Management Policies and the NPS Organic Act identify the need to protect the scenic values of parks. While the views within the Keys Ranch have been considered (and protected) through the designation of the Historic District, those outside the Ranch and those from other related sites have not yet been considered. The alternatives described herein, however, would not affect park scenic values outside the district, except with respect to the potential placement of a caretaker residence and/or small visitor contact facility. These facilities would be located to avoid being seen from other Keys related sites.

IV. AFFECTED ENVIRONMENT

Joshua Tree National Park contains an extraordinary cross section of the California Desert. It spans two major desert ecosystems and an unusual ecological transition zone. It has tremendous biological diversity, vast desert landscapes and rich human history (NPS1995:19).

Geology/Soils

The park is part of the Basin and Range Province. The terrain consists of low, generally east- west trending mountains interspersed with intermontane valleys: a setting characteristic of much of the western Mojave region. Millions of years ago, the landscape of the park consisted of rolling hills covered with a soil mantle that had developed in a hot, semiarid to humid climate with 80 percent more precipitation and 30 percent less evaporation than is typical now. Climatic changes since then have resulted in erosion rates that exceed soil formation rates. As a result, soil and vegetation has been removed leaving the huge sub- angular and rounded granitic boulders and boulder piles characteristic of the park (GMP 1995:139). Washes, playas and alluvial fans coexist to form an extensive and complex desert mosaic (NPS 2002a).

The relief of the area is due to extensive block faulting by which large sections of the earth's crust have been broken, tilted and raised. The area is notable for the relief formed by block faulting and subsequent erosion (NPS 2004). The large boulders and boulder outcrops characteristic of the park landscape are the result of weathering along well- developed jointing. The initial weathering is along the joints and forms rectangular blocks. As weathering continues, the corners of the blocks are rounded off, resulting in the characteristic rounded shapes. Spheroidal weathering is typical of this type of rock – quartz monzonite (Bureau of Reclamation 1995a).

While no comprehensive mineral surveys have been completed, the numerous mines in the park are known to have produced approximately 12,000 troy ounces of gold, 16,000 troy ounces of silver, 33,000 troy ounces of by-product lead, and over 20 tons of bismuth ore. Areas near the park with similar geology contain significant deposits of tungsten, manganese, uranium and thorium- bearing minerals (GMP 1995:139).

Soils in the park are poorly developed. The eastern half is mostly alluvial with no true soil structure. Surface soils are granitic and range from boulders to gravel and coarse sand. Modern deposits consist of fan gravel and other alluvium deposited by drainage systems. There are no known rare or unique soils in the park (NPS 1995: 139).

Water Resources

In the park, groundwater follows zones of least resistance along deeply fractured rock masses and deep loose gravel (NPS 1995:145). Approximately 120 known water sources, including springs, wells, seeps and a short perennial stream occur in the park. Little surface water exists in Joshua Tree National Park, other than that impounded in season by the three Keys Ranch reservoirs (Barker, Cow Camp and Keys Lake). The Pinto Basin, however, is known to contain a large groundwater reservoir, estimated by the USFS to be able to yield 300,000 acre feet of water from the upper 100 feet of the saturated zone (NPS 1995: 145). Over time, changes in water quantity have been noted and may be attributable to climatic variations, changes in vegetation, sampling error, water pumping and use or natural variation (NPS 1995:146). The Pacific decadel (an approximate 40- year cycle) of higher and lower precipitation may be responsible for changes observed in recent years (Fesnock pers. comm. 2005). Willis and Bill Keys also told of relatively consistent snow accumulation and wet winters (Willis Keys pers. comm. 2005 and Kidwell 1977).

Keys Ranch Dams

The three Keys dams were constructed of concrete or concrete and stone masonry across normally dry washes to impound runoff for household water, livestock and irrigation (NPS 1980). Together they comprise a reservoir that can store approximately 25- acre feet of water (Bureau of Reclamation 1992 and 1995abc).

In 1980, these dams along with the dams at Barker, Cow Camp and Squaw Tank were inspected within the *Recommended Guidelines for Safety Inspection of Dams*, Office of the Chief Engineers, Department of the Army. According to the report, all of the Keys dams were at maximum capacity and water was running over the crest of Barker, Cow Camp and Upper Keys dams. The report noted shrinkage cracks, near vertical construction of the dams, and vegetation growing within the cracks and crevices on the downstream faces of the dams, but no concrete deterioration (National Park Service 1980). It concluded that "the dams have cross- sectional properties below minimums, are inadequately keyed into rock, lack contraction joints, and have questionable quality of concrete which is inadequately reinforced" and that the dams could fail. Nevertheless, the inspector did not think it necessary to strengthen the dams or to permanently lower the water level at the time because 1) the dams are small and located in remote areas so potential loss of life and property damage would be minimal in event of failure, 2) the dams have been stable for many years and the stone and concrete used for construction remain in good condition, and 3) any proposed method for strengthening the dams would be expensive, difficult and (would) impact the dams' historical significance. The report did recommend periodic removal of the vegetation on the downstream faces of the dams to prevent further deterioration of the structures.

The following information is taken from the 1992 and 1995 Bureau of Reclamation inspection reports for the Keys Ranch Dams:

> Lower Keys Ranch Dam is the largest structure. The dam is about 19.1 feet high from the channel bottom. It consists of two sections constructed at different times. The newer, upper section, made of concrete, rests on the older, lower section which is made of stone masonry. The crest length of the dam is about 122 feet; the ends of the dam (about 30- foot lengths) angle upstream making approximately a 45 degree angle with the center section. Lower Keys Ranch Dam does not have a spillway; rather, the reservoir water surface elevation is controlled by the crest of Upper Keys Ranch Dam, which is about 7.25 feet below the crest of Lower Keys Ranch Dam (Bureau of Reclamation 1992).
>
> The center section is supported by two buttresses. The structure has a 1- inch diameter pipe at the base. This steel pipe is rusted and plugged and does not function (Bureau of Reclamation 1995a).
>
> Middle Keys Ranch dam is located about 100 feet north of Lower Keys Ranch Dam. It is the smallest of the three structures, constructed of concrete, and has a crest length of around 15 feet, and the height from the channel bottom of about 6 feet. The dam is a "V" shaped structure with the apex pointing downstream.
>
> The north leg has a length of 28 feet and the south leg has a length of 20 feet. There is a steel cable running along the surface of the north leg and then into the south leg. This cable may have originally been intended to reinforce the corner or it may be left over from construction (Bureau of Reclamation 1995b).
>
> Upper Keys Ranch Dam, located about 200 feet north of Middle Keys Ranch Dam, is an arch- shaped, masonry structure. It has a crest length of about 27 feet, and a height from the channel bottom of 19.2 feet. This structure has the lowest crest elevation of the three dams, and thus controls the reservoir water surface elevation. Although this structure has the same structural height as Lower Keys Ranch Dam, its crest elevation is about 7.25 feet below that of Lower Keys Ranch Dam, and about 1.0 foot below that of Middle Keys Ranch Dam.
>
> The 3- inch diameter gated steel pipe at Upper Keys Dam is the only outlet for the reservoir (Bureau of Reclamation 1995a, 199b, 1995c) and could drain the reservoir in three weeks (Bureau of Reclamation 1995c). There are three valves on the outlet pipe. The most upstream valve is broken in the full open position; the second is used as the guard valve and can be opened and closed, however the casting on this valve was cracked and had been repaired with fiberglass. The third valve is located at Keys Ranch and is [was formerly] used as the operating valve to irrigate the garden (orchard) (Bureau of Reclamation 1995c).

Later, this report (Bureau of Reclamation 1992) gives the estimated peak discharge capacities for each of the dams [Upper Keys – 2,900 cubic feet per second (cfs), Middle – 400 cfs, Lower – 5,200 cfs] as well as an estimate of the channel capacity (1000 cfs).

In 1992, the dams were inspected again with a report prepared this time by the Bureau of Reclamation: Downstream Hazard Classification: Lower, Middle and Upper Keys Ranch Dams, Joshua Tree National Monument. At this time, based on a memo from the park superintendent to the Western Regional Director, it appears that there was some concern regarding visitor safety on guided tours of the Keys Ranch should the dams fail. The superintendent noted that instead of destroying the dams, an Emergency Action Plan would be prepared to satisfy the concerns of visitor safety during high water levels, and the park would suspend tours when this water level was met. The superintendent requested more information about what this water level should be. Retaining the dams would allow them to continue to provide habitat for sensitive species such as bighorn sheep and migratory waterfowl (National Park Service, 1992).

It should be noted, as is stated in the 1992 inspection report (Bureau of Reclamation 1992), that:

> *Downstream hazard classification is not associated with the existing condition of a dam and its appurtenant structures, nor the anticipated performance or operation of a dam.* Rather, downstream hazard classification is a statement of potential adverse impact on human life and downstream development if a dam should fail.

Table 2
Downstream Hazard Classification System

Classification	Lives-In-Jeopardy	Economic Loss
Low	0	Minimal (undeveloped agriculture, occasional uninhabited structures, or minimal outstanding natural resources)
Significant	1-6	Appreciable (rural area with notable agriculture, industry or worksites, or outstanding natural resources)
High	More than 6	Excessive (urban area including extensive community, industry, agriculture, or outstanding natural resources)

(Bureau of Reclamation 1992)

The 1992 inspection report for Upper, Middle and Lower Keys Ranch Dams classified those dams as significant, low and high- hazard facilities, respectively (Bureau of Reclamation 1992). The report noted that failure of Upper and Lower Keys Ranch Dams has the potential to result in a dangerous situation to visitors at Keys Ranch because portions of this site would experience depths and velocities that would be lethal to persons on foot. It also noted that a failure flood from Lower Keys Ranch Dam has the potential to result in more lives in jeopardy than that from Upper Keys Ranch Dam due to its larger size and proximity to visitors. The low hazard rating was given to Middle Keys Ranch Dam because it is a smaller structure and should it fail, the failure discharge would be contained within the main channel, with the chance for visitors to have their lives in jeopardy being very small (Bureau of Reclamation 1992). The report recommended (as noted above) that the dams be deactivated by cutting a hole in them or by removing them. It also noted that Emergency Action Plans, as required by DOI guidelines, did not exist for any of the dams.

The 1992 Bureau of Reclamation inspection report also reaffirmed the poor quality of the dams: "There is no background information on the design and construction and construction dates of the dams. Based on field inspection, the dams are poorly designed and engineered, and crudely constructed."

In 1995, the dams were inspected again and given Dam Classification Codes (Bureau of Reclamation 1995a, 1995b, 1995c). At the time of the 1992 inspection, Keys Ranch tours (limited to 20 people) occurred two to three times a day on weekends (Bureau of Reclamation 1995c).

The Lower Keys Ranch Dam was given a code of FAIR to POOR (Bureau of Reclamation 1995a). The report noted that the dam has performed satisfactorily under previous hydraulic and seismic loadings, however the reservoir is not normally full and it is not known how the dam would perform under full loading for a long period of time or how the dam would perform if a seismic event occurred during a full reservoir. This inspection recommended removing the scaffolding (as a public safety hazard) which was present during this and the former inspections and preparing an SOP based on the Inspection and Maintenance criteria below.

The Middle Keys Ranch Dam was also given a code of FAIR to POOR (Bureau of Reclamation 1995b) because the dam does not normally hold water and if full pool or a seismic event occurred, it is unknown how it would perform.

The Upper Keys Ranch Dam was given a code of FAIR. The report noted that the dam had performed satisfactorily during past normal operating conditions, past flood flows and past seismic shaking and that flood flows which have passed over the crest have not damaged the dam or its foundation. It noted that the dam may show distress during a maximum credible earthquake (MCE) but that it is not expected to fail (Bureau of Reclamation 1995c).

According to the report, water in the Upper Keys Dam could still be impounded to the top, but that should it begin overtopping the dam, the area downstream of the dam should be kept clear of visitors (Bureau of Reclamation 1995c). The report also recommended preparing an SOP based on the Inspection and Maintenance criteria.

Inspection and maintenance criteria recommended for Lower Keys Dam (Bureau of Reclamation 1995a) are as follows:

1) The Emergency Action Plan (EAP) and Standard Operating Procedure (SOP) should be available at the maintenance facility.
2) The cement mortar and concrete in the dam should be checked once a year for cracking and spalling. The mortar and concrete should be repaired as needed.
3) Vegetation should not be allowed to grow on the upstream or downstream faces of the structure. The vegetation will lead to deterioration of the mortar bedding and concrete.
4) The park should annually photograph the dam and foundation area. The photographs can then be compared to allow maintenance people to follow the condition of the dam. Specific items to be concerned with would be cracks and areas of seepage through the dam, through the abutments, and through the foundation.
5) The dam should be inspected as soon as possible after large rainfall events and seismic events.
6) If structural stress or excessive seepage is noticed, the reservoir should be lowered as soon as possible and the condition should be evaluated by qualified personnel.

The same inspection and maintenance criteria as above, with the exception of #1 (because the EAP and SOP are the same), were noted for Middle Keys Ranch (Bureau of Reclamation 1995b). All of the same inspection and maintenance criteria, plus the following were noted for Upper Keys Ranch:

- The valves should be operated at least once a year (Bureau of Reclamation 1995c).

All three dams were given a National Park Service Operating and Maintenance Code of 1 and the report noted that the dams appeared to be adequately maintained to perform their current function (Bureau of Reclamation 1995a, 1995b, 1995c).

In 2005, a joint report by the NPS and BOR found that the reports recommended in the 1994 safety study remain incomplete for the Keys Ranch reservoir and made the following recommendations for maintenance of the lower, middle and upper dams (BOR 2005):

Lower

- establish source for portable pumps
- establish logbook
- remove accumulated old lumber from the area immediately downstream

Middle

- remove lumber and debris form against downstream face of the left leg of the dam and from the area immediately downstream

Upper

- establish source for portable pumps
- establish logbook

Water Quality

According to the GMP (NPS 1995: 147), ground and surface water quality appears to be unaffected by water use outside the park because the majority of the land inside the park is at a higher elevation than its surroundings, no water flows in from outside sources. Concentrations of likely airborne pollutants, however, have been documented in ephemeral pools.

Although there is no specific information about water quality at Keys Ranch it is likely that the water quality is good, except with respect to water quality in the vicinity of the mill tailing pile adjacent to an unnamed creek. This area has been investigated for contaminated soils and funding is in the process of being sought for remediation. Without further investigation, however, it is not known what level of clean- up will be required and how that clean- up may affect preservation of the historic scene. Park water quality assessments beyond analysis of old mining areas are limited to a Level 1 survey of streams, springs and seeps and includes only basic information such as temperature and pH as well as total dissolved solids. They do not include an assessment of other possible contaminants. Where park water is used for human consumption, however, additional information about water quality is available as a result of required testing protocols, including public disclosure statements. Park water quality meets all state and federal standards when used for drinking water. Water for the caretaker's trailer site at Keys Ranch is trucked in and placed in a 1000- gallon water storage tank on site. Other than the existing (currently unused) well, no additional water is available at Keys Ranch to support proposed new operations/uses.

Water Quantity

According to NPS 2004, flows from springs and seeps range from seasonal dampness to about seven gallons per minute. The majority of the springs flow from fractures and joints in the base rock and appear to be supported by local aquifers. Water monitoring indicates that the discharge at springs is decreasing. This condition is supported by the observation of local residents and, as with other noticeable changes in water supply, could be a result of climate change, changes in vegetation, sampling error or natural variation. These springs can support prolific vegetation with little or no surface water.

As noted above, the Keys Ranch Dams, which form a single reservoir, have a combined capacity of approximately 25- acre feet. Cow Camp Dam has a capacity of approximately 40- acre feet and Barker Dam has a capacity of approximately 25- acre feet. In addition, except in extremely dry years (when water from the reservoirs was used) and except for irrigation water, the Keys Ranch well provided sufficient water for the Keys' family needs. Nonetheless, it is not known what quantity of water is needed to maintain either the healthy bighorn sheep population or the orchard, or other existing or expanded operations at Keys Ranch.

Wetlands

Because of water impoundments in the vicinity of Keys Ranch (Barker Dam, Keys Dams, and Cow Camp Dam), freshwater wetland habitats have been created. Flow from the dams also contributes to intermittent creeks in the vicinity. A number of small springs and ephemeral creeks also occur. In spring 2005 during a particularly wet year, water was flowing in the creek along the Historic Ranch Road (in the vicinity of the road cut/Native American interpretive area) as well as in the creek running alongside the main Ranch House. Evidence of water (a spring) was also noted at the lower fields.

Floodplains

Floods and flash floods may occur throughout the park. Surface flows occur in most drainages only as a result of heavy precipitation and are typically short lived, lasting only a few hours or days. The areas used by Keys for his ranch and cattle grazing are all in drainage areas subject to flood and flash flood conditions (NPS 2004). The Keys Ranch experienced localized flooding and flash flooding during the Keys' family occupation of it. Because of this Bill Keys increased the height of Barker Dam and built the other dams behind the Ranch. Improvements next to the main Ranch House were made in response to localized flooding that inundated the building during his time. Later, NPS maintenance staff constructed a small berm to separate the Ranch House from nearby areas (Stevens pers. comm. 2005).

A comparison of some panoramic photos in NPS 2004 show a view looking down on the Ranch with the Ranch House and McHaney cabins constructed north of a large wash (1917 photo) and a later (1970s) photo that shows most structures constructed north of the same still evident wash.

Native Vegetation

Two deserts, whose characteristics are determined primarily by elevation, come together at Joshua Tree National Park. Below 3,000 feet, the Colorado Desert, occupying the eastern half of the park is dominated by abundant creosote bush. The higher, moister, and slightly cooler Mojave Desert is the area where the Joshua tree thrives, extensive stands of which occur throughout the western half of the park. Riparian areas pass in and out of the Mojave and Colorado desert plant communities. The washes in the park support a riparian association of mesquite (*Prosopis* sp.), desert willow (*Chilopsis* sp.), smoke tree (*Parosela* sp.), palo verde (*Cercidium floridum*), various willows (*Salix* spp.) and cottonwood (*Populus fremontii*), which is one of the few large native trees (30- 100 feet) found in this desert environment. More than 850 species of plants have been documented in the park.

The Mojave Desert is typically more biologically diverse than the Colorado Desert, likely due to greater precipitation. In the Mojave, densities of Joshua Trees vary dramatically. The thickest forests include the area surrounding the proposed project area in the Lost Horse and Queen valleys.

In the Mojave Desert, above 3,000 feet, three basic plant communities have been classified (Holland 1986 in GMP 1995). These include:

- Mojave Mixed Steppe (consisting of Joshua trees, galleta grass, and needle grass)
- Blackbrush Scrub (consisting of blackbrush, Mojave yucca, Joshua trees, and California junipers), and
- Mojave and Pinyon Juniper Woodland (consisting of pinyon pine, scrub oak, and California juniper).

Of only 158 desert fan palm oases in North America, five are located within the park. These support unique assemblages of both plants and animals (NPS 2001).

The Keys Ranch is located within the Mojave Desert section of the park near Lost Horse and Queen Valley, and supports the following three plant associations:

1) Mojave yucca (*Yucca schidigera*), creosote bush (*Larrea tridentata*) and Big Galleta grass (*Pleuraphis rigida*).
2) Joshua Tree (*Yucca brevifolia*) and black brush (*Coleogyne ramosissima*), and
3) California juniper (*Juniperus californica*) and black brush.

Dramatic changes in vegetation have apparently occurred over the decades since William Keys first moved to the area. His son, Willis Keys, tells of a large juniper forest, with trees in excess of 24 inches in diameter that once occurred in the hills behind the Ranch (Willis Keys, pers. comm. 2005). Early settlers to the area, including the Keys' family, noted lush waist high grasses in secluded valleys (likely perennial bunchgrasses lost eventually through changes in climate and overgrazing). While this vegetation drew settlers and early agriculture (such as orchards and other crops) to the area, these endeavors soon faded as the more abundant rainfall that had occurred throughout the early period of settlement diminished and normal rainfall conditions resumed.

Wildlife

Approximately 350 vertebrate species inhabit the park. Large mammals in the area include desert bighorn sheep, mule deer, and mountain lion. The most common mammals include mice and wood rats, white- tailed antelope ground squirrels, chipmunks, coyotes, black- tailed rabbits and two species of fox. Large mammals include the desert bighorn sheep, mule deer, mountain lion, bobcat and coyote. About 12 species of bats occur in the park. There are about 15 species of lizard and 19 species of snakes found in the park.

Over 270 species of birds live in or fly through the park, which is adjacent to a major migratory flyway in the Coachella Valley. The park provides critical stopover habitat for loons, grebes, herons, egrets and avocets. The birds most commonly seen in the park include Gambel's quail, black- throated sparrows, scrub jays, ravens, road runners and wrens. The park oases are important during both summer and winter migrations of many species along the western flyway.

Invertebrates are common, but have not been systematically inventoried. Both the black widow and brown recluse spiders occur in the park, as do scorpions and tarantulas. Various centipedes, millipedes and ticks are found, along with a wide variety of other insects, including ants, dragonflies, beetles and wasps.

The Keys Ranch has had both shallow ground water and occasional surface water for centuries (Freilich ____, cited in McCutchen 2001). It is one of few reliable water sources in the vicinity and because of this is frequented by a variety of wildlife.

Large and mid- sized mammals, including the following species have been documented in the vicinity of Keys Ranch: desert bighorn sheep (*Ovis canadensis*), mule deer (*Odocoileus hemionus*), mountain lions (*Felis concolor*), bobcats (*Lynx rufus*), gray fox (*Urocyon cineoargenteus*), and coyotes (*Canis latrans*). Small mammals including the following have also been noted: mastiff bat (*Eumops perotis*), yellow bat (*Lasiurus xanthinus*), dusky- footed woodrat (*Neotoma fuscipes*), spotted skunk (*Spilozale putorius*), and Merriam's kangaroo rat (*Dipodomys merriami*), pocket gophers (*Thomomys bottae*), and pocket mice (Perognathus sp. and Chaetodipus sp.). Reptiles and amphibians include the: desert tortoise (*Gopherus agassizii*), whiptail lizard (*Aspidosclis tigris*), Mojave black collared lizard (*Crotophytus bicinctores*) and desert spiny lizard (*Sceloporus magister*), and red spotted toad (*Bufo punctatus*).

A wide array of birds are also noted from the Keys Ranch, including resident birds such as the Sora rail (*Porzana carolin*), American coot (*Fulica Americana*), and black phoebe (*Sgyomis nigricans*), violet green swallow (*Tachycineta thalassina*), spotted sandpiper (*Actitus macularis*), and a variety of ducks associated with the reservoirs.

Rare, Threatened and Endangered Species

The following species may occur within the vicinity of Keys Ranch and areas affected by the Alternatives proposed in this Environmental Assessment.

Table 3:
Federally Listed or Proposed Species

Species	Federal Status	State/CNPS Status and Occurrence
Desert Tortoise (*Gopherus agassizii*)	Threatened	Threatened Found at Keys Ranch
Flat-tailed Horned Lizard (*Phrynosoma mcallli*)	Federally Proposed Threatened	Unknown occurrence in the vicinity of Keys Ranch
Coachella Valley Milk Vetch (*Astragalus lentiginosus* var. *coachellae*)	Endangered	CNPS 1B RED 2-2-3 Voucher specimen from park was recently determined to be from another very similar species. Has not been found in park.
Little San Bernardino Mountains Gilia *(Linanthus maculatus)*	Endangered	CNPS 1B RED 3-2-3 Found in vicinity of Keys Ranch

Table 4
Other Special Status Species

Species	Federal Status	State/CNPS Status and Occurrence
Rock Pennyroyal (*Monardella robisonii*)	Sensitive	CNPS 1B RED 3-1-3 Found in vicinity of Keys Ranch
California ditaxis (*Ditaxis californica*)	Sensitive	CNPS 3 RED ?-2-3 Does not occur at Keys Ranch
Apressed muhly (grass) (*Muhlenbergia apressa*)	---	CNPS 2 RED 2-2-1 Found in vicinity of Keys Ranch
Spearleaf (*Matelea parvifolia*)	---	CNPS 2 RED 3-1-1 Found in vicinity of Keys Ranch
Providence Mountains Milkvetch (*Astragalus tricarinatus*)	---	CNPS 1B RED 3-2-3 Voucher specimen comes from Keys Ranch vicinity
Thurber's beardtongue (*Penstemon thurberi*)	---	CNPS 4 RED 1-2-1 Found in vicinity of Keys Ranch
Alkali Mariposa Lily Calochortus striatus	---	CNPS 1B RED 2-2-2 Found in vicinity of Keys Ranch
Parish's Daisy (*Erigeron parishii*)	Federally threatened	CNPS 1B1 RED 2-3-3 Habitat but not plant is found in vicinity of Keys Ranch
Foxtail Cactus (*Escovaria vivipara var. alversonii*)	Sensitive	CNPS ??? RED ???
Bighorn Sheep (*Ovis canadensis*)	---	Special Concern
American Badger (*Taxidea taxus*)	---	Special Concern
Palm Springs Little Pocket Mouse (*Perognatus longimembris bangsi*)	Sensitive	Special Concern

Chuckwalla (*Sauromalus obesus*)	Sensitive	---
Colorado Desert Fringe-toed Lizard (*Uma notata notata*)	Sensitive	Special Concern
Prairie Falcon (*Falco mexicanus*)	---	Special Concern
Mountain Quail (*Oreortyx pictus*)	Sensitive	---
Burrowing Owl (*Speotyto cunicularia*)	Sensitive	Special Concern
California horned lark (*Eremophila alpestris actia*)	Sensitive	Special Concern
Eagle Mountain Scrub Jay (*Aphelocoma coerulescens cana*)	Sensitive	Special Concern
Loggerhead Shrike (*Lanius ludovicianus*)	Sensitive	Special Concern
California Leaf-nosed Bat (*Macrotus californicus*)	Sensitive	Special Concern
Pallid Bat (*Antrozous pallidus*)	---	Special Concern
Greater Western Mastiff Bat (*Eumops perotis californicus*)	Sensitive	Special Concern Found in vicinity of Keys Ranch
Townsend's Western Big-eared Bat (*Plecotus townsedii townsendii*)	Sensitive	Special Concern

The following definitions also come from the California Native Plant Society (CNPS) website (July 2005):
CNPS 1A: Plants Presumed Extinct in California
CNPS 1B: Plants Rare, Threatened or Endangered in California and Elsewhere
All of the plants constituting List 1B meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing.
CNPS 2: Plants Rare, Threatened or Endangered in California, but more common Elsewhere
With List 2, CNPS recognizes the importance of protecting the geographic range of widespread species. All of the plants constituting List 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing.
CNPS3: Plants About Which CNPS Needs More Information – A Review List
CNPS4: Plants of Limited Distribution – A Watch List

CNPS RED Codes:
These codes represent the different factors that contribute to the list assignments. They are:
Rarity – the number of individuals and their distribution within California;
Endangerment – the plant's vulnerability to extinction for any reason; and
Distribution – the overall range of the plant.

Together these three elements form the **R- E- D** Code. Each element is divided into three classes or degrees of concern, represented by the number 1, 2, or 3. In each case, higher numbers indicate greater concern.

Rare Plants: As noted in the table above, seven rare plant species occur in the vicinity of Keys Ranch. Although these plants do not occur within the area affected by development (buildings and structures and circulation), they do occur within the boundary of the administrative closure.

The following information about park rare plants was compiled off the California Native Plant Society website and then added to based on occurrence in the park by park Botanist, Tasha LaDoux (January 2005).

Coachella Valley Milk-Vetch (*Astragalus lentiginosus*): Coachella Valley milk- vetch grows in sandy Sonoran desert scrub at elevations of 200- 2,100 feet (60 - 655 meters). This member of the Fabaceae family is an annual/perennial herb, blooming February to May (CNPS 2001). It is endemic to Riverside County, California; fewer than 20 occurrences are recorded in the Coachella Valley. Some of these locations are protected in the

Coachella Valley Preserve system. This milk- vetch is threatened by development and off- road vehicles. It is found in the following USGS Quadrangle locations: Seven Palms Valley, Cathedral City, Myoma, Desert Hot Springs, Palm Springs, Rancho Mirage, Morongo Valley

Providence Mountains Milk-Vetch (*Astragalus tricarinatus*): Providence Mountains milk- vetch (Fabaceae) grows in sandy or gravelly locations in Joshua Tree woodland and Sonoran desert scrub at elevations from 1,500- 2,700 feet (450 - 830 meters). It is known from about eight occurrences, totaling fewer than 100 plants in Riverside and San Bernardino counties. It may be threatened by pipeline work. This milk- vetch is a perennial herb, blooming from February- May (CNPS 2001). It is found in the following USGS Quadrangle locations: Valerie, Martinez, Desert Hot Springs, White water, Catclaw Flat, Morongo Valley.

Alkali Mariposa Lily (*Calochortus striatus*): The Alkali Mariposa Lily (Liliaceae) is on a watch list in Nevada. It grows in chaparral, chenopod scrub, Mojavean desert scrub, and alkaline or mesic meadows and seeps between elevations of 230 – 5,200 feet (70- 1,595 meters). It is found in Kern, Los Angeles, San Bernardino and Tulare counties in California, and in Nevada (CNPS 2001). It is a perennial herb that blooms from April – June (CNPS 2001). It is found in the following USGS Quadrangle locations: Indian Cove, Twentynine Palms, Cougar Buttes, Lucerne Valley, Big Bear City, Waterman Mountain

California Ditaxis (*Ditaxis serrata*): California ditaxis (Euphorbiaceae) grows in Sonoran desert scrub from 100- 4,000 feet (30 – 1,200 meters). It is found in Riverside and San Diego counties in California, and in Sonora, Mexico. It is known from fewer than twenty occurrences, most with few plants (CNPS 2001). It has been seen near Eagle Mountain and in the Coachella Valley (Jepson 1993). It is a synonym of *D. californica* in Jepson. See *Madrono* 42(4): 455- 457 (1995) for revised nomenclature. It is a perennial herb, blooming March – December (CNPS 2001). It is found in the following USGS Quadrangle locations: Desert Center, Hayfield, Hayfield Spring, Cottonwood Spring, Victory Pass, Porcupine Spring, Corn Springs, Mortmar, La Quinta,

Parish's Daisy (*Erigeron parishii*): Parish's daisy, a member of Asteraceae, is a federally threatened species. It grows in Mojavean desert scrub and pinyon/juniper woodland, usually in carbonate areas, between elevations of 2,600- 6,600 feet (800 – 2,000 meters). It is found in Riverside and San Bernardino counties in California. The plant is threatened by carbonate mining, vehicles and development. See *Synoptical Flora of North America* 1(2):221 (1884) for original description, and *Fremontia* 16(1):20- 21(1988) for discussion of threats. It is a perennial herb, blooming May – June (CNPS 2002). It is found in the following USGS Quadrangle locations: Yucca Valley south, Yucca Valley north, Onyx Peak

Little San Bernardino Linanthus (*Linanthus maculatus*): The Little San Bernardino linanthus (Polemoniaceae) grows in desert dunes and sandy areas of Joshua tree woodland and Mojavean and Sonoran desert scrub, between elevations of 640 - 6,800 feet (195- 2,075 meters). It is found in Riverside and San Bernardino counties, and is known from fewer than fifteen occurrences near Joshua Tree NP. This linanthus is threatened by vehicles, development and dumping. It is an annual herb, blooming March – May (CNPS 2001). It is found in the following USGS Quadrangle locations: Seven Palms Valley, Joshua Tree South, Toro Peak, Desert Hot Springs, Sunfair, Joshua Tree North, and Morongo Valley

Spearleaf (*Matelea parvifoli*): Spearleaf grows (Asclepiadaceae) in rocky parts of Mojavean and Sonoran desert scrub, at elevations from 1,400- 3,600 feet (440- 1,095 meters). It is found in Riverside, San Bernardino and San Diego counties in California; and in Arizona, Nevada, Texas, Baja California, Mexico and elsewhere (CNPS 2001. Its populations are widely scattered (Jepson 1993). It is a perennial herb, blooming March – May (CNPS 2001). It is found in the following USGS Quadrangle locations: Cottonwood Spring, Indian Cove, Corn Springs, Red Cloud Canyon, Rancho Mirage

Robison's Monardella (*Monardella robisonii*): Robison's monardella (Lamiaceae) grows in pinyon/juniper woodland between 2,000 - 4,900 feet (610 – 1,500 meters). It is found in Riverside and San Bernardino counties in California, and possibly in Baja California. It is known from fewer than twenty occurrences. It is closely related to and may be a variety of *M. linoides*. This is a rhizomatous perennial herb, blooming April – October

(CNPS 2001). In a 1999 study (JTNP *et al.* 2000), it was determined that *M. robisonii* habitat, granitic outcrops, coincides with areas favored for rock climbing and that heavy use of these areas poses a potential threat to the occurrences of *M. robisonii.* It is found in the following USGS Quadrangle locations: Indian Cove, Joshua Tree South, Malpai Hill, Morongo Valley, Dale Lake.

Appressed Muhly (*Muhlenbergia apressa*): Apressed muhly (Poaceae) grows in open canyon bottoms (Jepson 1993) and rocky areas of coastal scrub, Mojavean desert scrub and valley and foothill grasslands. It occurs at elevations from 65- 5,250 feet (20 –1,600 meters). It is found in San Bernardino county and San Clemente Island in California; and in Arizona and Baja California, Mexico. It is known on the California mainland only from the Providence mountains, but is poorly collected. See Journal of the Washington Academy of Sciences 31:504 (1914) for original description and *Madrono* 35(4):353 (1988) for discussion of San Clemente Island records. This is an annual herb blooming April – May CNPS (2001). It is found in the following USGS Quadrangle locations: Indian Cove, Fountain Peak

Thurber's Beardtongue (*Penstemon thurberi*): Thurber's beardtongue grows on sandy and gravelly slope and mesas (Jepson 1993) in chaparral, Joshua tree woodland, pinyon/juniper woodland and Sonoran desert scrub between1,650- 4,000 feet (500 –1,200 meters). This taxon of Scrophulariaceae is found in Imperial, Riverside, San Bernardino and San Diego counties in California; and in Arizona, Nevada, New Mexico, Baja California and elsewhere. It is a perennial herb, blooming May – July (CNPS 2001). It is found in the following USGS Quadrangle locations: unknown, but Park has a voucher.

Desert Tortoise (*Gopherus agassizii*): The Mojave populations of the desert tortoise are threatened by habitat loss, habitat degradation (exotic weeds), mining, grazing, off- road vehicle use, and construction projects (roads, powerlines, etc.). Joshua Tree National Park has been surveying for tortoises since 1978 in the Pinto Basin area. This area was originally believed to be less desirable for tortoises because the habitat is high elevation black brush and juniper. Recent distance sampling surveys (Anderson and Burnham 1994) in the black brush communities, however, have documented a small population of animals. Six adult animals were sighted in the Queen Valley area during the 1998 field season; six were sighted in 1999 and two additional animals were radio tagged at Keys Ranch (1999). Since then surveys conducted to U.S. Fish and Wildlife Service protocol have been conducted at Keys Ranch and have detected individual tortoises moving through the area through the presence of scat. In addition an abandoned burrow was found in the vicinity of the storehouse at the Ranch.

Bighorn Sheep (*Ovis canadensis*): Bighorn sheep are designated Species of Special Concern by the California Department of Fish and Game because of their low numbers and their sensitivity to human disturbance. Bighorn sheep densities are determined by the amount and quality of vegetation across the landscape, however, water is a limiting resource. Most bighorn sheep biologists believe that bighorn sheep must drink water each day. Available water cannot drive a herd to increase in size, however, if an area has ample vegetation, but no water, bighorn sheep cannot persist.

The park has several herds of bighorn sheep whose boundaries roughly correspond to the mountain ranges within the park. The population in the park is considered to be one of the healthiest in California. The Queen's Mountain Herd often occurs in the vicinity of Keys Ranch. It is likely that the water captured and retained by the Barker Dam, Keys Ranch Dam, and Cow Camp Dam allow bighorns to occupy more area in the park than they could without the abundant water supplied by the three reservoirs. If these water systems were no longer available, it is highly likely that the Queen's Mountain Herd would occupy less area and consequently have less forage available leading to declines in bighorn sheep numbers.

Archeology

Prehistoric Archeological Resources Overview: According to an Environmental Assessment developed for road rehabilitation, archeological and historic resources in the region of Joshua Tree National Park may reflect as much as 11,000 years of human use and occupation (NPS 1999). Archeological evidence documents the earliest human activity within the region to the Paleoindian period (circa 12,000 to 8,500 years ago). Fluted projectile

points of the Paleoindian period have been found in the region and are thought to be associated with a tradition of big- game hunting that could date back to 11,000 years ago. These fluted points resemble Clovis- Folsom points and suggest that the peoples who lived and hunted on the margins of Lake Mojave 11,000 years ago represent a peripheral outpost of the Great Plains Fluted Point Tradition. Artifacts of a slightly later period, the Early Archaic (circa 8,500 years ago) including those of the San Dieguito and Lake Mojave complexes, have also been found in the region. The main economic activities of the Archaic period are believed to be predominately hunting, fishing, and gathering with the beginning of the domestication of some locally available plants. Following the Early Archaic period, a paucity of archeological artifacts indicates a decline in the use of the area as the climate gradually became warmer and drier and more desert- like conditions prevailed (Heizer and Whipple 1971).

During the Late Archaic period from about 5,000 to 1,000 years ago, evidence exits of an increase in human occupation in what is now the park. During the wetter Pleistocene Era, the Pinto Culture lived in the Pinto Basin region as hunters and gatherers along what used to be a slow moving river (NPS 2002a). Evidence of their occupation includes artifacts dating from about 7,000 to 10,000 years ago, including Pinto projectile points, which are well known from the Pinto Basin site and other sites in the park (Schroth 1994). William and Elizabeth Campbell, early southern California archeologists, were the first to describe the Pinto Culture. Their photographs, field notes, personal papers, library and many of their artifacts are part of the park's collection (NPS 2005a). Patayan occupation or influence from the lower Colorado River area may have begun as early as 1300 years ago (Heizer and Whipple 1971). Evidence of Patayan occupation or influence includes the presence of milling sites to process seeds and grains which indicates some level of agricultural production, while the presence of points and other tools for hunting also suggests a hunter and gatherer economy.

From 8,500 to 5,000 years ago the main trends in human occupation of the area reflect an adjustment to the region's various natural environments and increased subsistence efficiency. A useful model for understanding this long- lasting adaptation to desert living documented by archeological artifacts in the region is the "Desert Culture" or "Desert Archaic." As playa lakes began to dry and desert plants replaced the grasslands many large game animals migrated to more favorable habitat. The drier conditions also meant that the peoples living in the region had to diversify subsistence patterns to adapt to a life based on desert hunting and gathering. This mode of living is characterized by small, mobile bands and by participation in a mixed hunting and gathering economy. Although milling equipment, the bow, ceramics, and perhaps even horticulture were added to the culture over time, the basic configuration of the culture may have remained relatively stable (Jennings, 1964, Fowler, 1986).

After about A.D. 1,000, judging from the frequency of sites that date within the last thousand years, occupation of the park area increased considerably. At the time of European contact, the boundaries of three American Indian groups the Cahuilla, Chemehuevi, and Serrano, intersected at points now within the park. The Chemehuevi occupied eastern portions of the park; the
Serrano, northern and northwestern portions; and the Cahuilla, southern and southwestern portions (Heizer and Whipple, 1971). Descendents of these Indian groups continue to live in the area and have cultural interests in the park (NPS 1995).

Indigenous subsistence patterns, trails for seasonal migrations, and regional trade are important aspects of the history of the area prior to European contact. Petroglyphs and pictographs scattered along a northwest-southeast path through the heart of park may be evidence of a prehistoric travel route. An historic Indian travel route, the Cocopa- Maricopa Indian Trail, traces the same general axis across the park (NPS 1995), passing east-west along the southern end of the park along the Santa Rosas and heading west over the pass through Banning/Beaumont.

Buried human remains have been found in the park (Schroth 1992). In June of 1992, park staff, in concert with Native Americans, completed repatriation of the remains of several Native Americans, associated grave goods, and objects of patrimony in the vicinity of Keys Ranch. This was done in accordance with the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA).

According to the Business Plan (NPS 2002a), the park contains approximately 501 archeological sites, most of which have not been evaluated according to eligibility criteria for the National Register of Historic Places. Based on the density of archeological sites, it is likely that the park contains many times the number of recorded sites.

Historic Archeological Resources Overview:
Exploration, mining, ranching and homesteading all occurred in the area now encompassed by the park. The first Europeans to visit the area were members of Spanish expeditions and explorers dispatched by the Mexican government in the late 18th and early 19th centuries. A Spanish army officer commanding California's Spanish forces probably entered the area now included in the park in 1772 when he crossed the Mojave Desert. Captain Jose Romero, representing the Mexican government, reconnoitered southern periphery of the present park while evaluating the east- west Cocopa- Maricopa Trail. The first American presence in the area is attributed to Jedediah Strong Smith, a fur trapper with the Rocky Mountain Fur Company who visited the area in the 1820s. Smith trekked westward through the area of the present park over the Colorado Desert and Mojave Desert Indian Trail reportedly becoming the first American to reach California via an overland route from the east (NPS, 1995).

During the gold strike of 1849, gold seekers traversed the area on their way to central California. In 1865, the first mining claim was filed in the present- day park and mining, mostly for gold, continued in and near the park into the 1960s (NPS, 1983). Contemporary with mining, cattle raising and homesteading occurred in the park from the mid 1800s to the 1960s. Cattle raising peaked during the 1920s, about the time that homesteading was getting started. Subsistence based homesteading, often coupled with mining and ranching activities, continued at least through the 1940s (NPS, 1995).

The park contains historic sites reflecting 19th and 20th century activities including ranching, mining, and homesteading. Historic properties listed in or eligible for the National Register of Historic Places are significant ranch- related, mining and homesteading sites and districts including Barker Dam, Cow Camp, Desert Queen Mine, Keys Ranch, Ryan House and Lost Horse Well, Wall Street Mill, Cottonwood Oasis, Eagle Cliff Mine, Eldorado Mine and Mill, Lost Horse Mine and Mill, Pinto Wye Arrastra, Pinyon Mountain Historic Mining District, and Twentynine Palms (Oasis of Mara).

Keys Ranch Prehistoric Archeological Resources:
Keys Ranch contains a rich prehistory with large midden deposits, rock art sites, pristine rockshelter sites and a year round water source that were important in its prehistory (Pepito 1997). Prehistoric occupation of the area by ancestors of the Serrano, Chemeuvi and Cahuilla tribes has been noted. Approximately 22 archeological sites have been recorded within the vicinity of the Keys Ranch, including near Barker Dam, Cow Camp, the Desert Queen Mine and Wall Street Mill. In 1959, the area was recorded as an archeological site by Paul G. Chace (CA- SBR- 762). According to A. Haenszel, who recorded the CA- SBR- 309 site, "Mr. Keys told me that when he first came to the ranch, Indian women still hauled things on a sort of travois past his house and over the ridge by this trail to Dove Spring. Also, in early days, he used the trail to drive horses to his pasture in the cove." CA- SBR- 2051 is the record for this trail, which follows the Keys Ranch entrance road past the ranch, over a saddle, then north- northwest to Dove Spring.

Keys Ranch archeological sites are typically a mixture of both historic and prehistoric archeological influences. Two representative archeological sites at the Keys Ranch are typically interpreted by park staff. These include the rock slicks adjacent to the entrance road and the middens located along the entrance road (exposed as part of the road cut). At the rock slicks, Keys collected and brought other artifacts, such as grinding stones (manos) to the site. At the midden site, four primary layers can be seen, including a bottom layer of sterile soil, a midden, mill tailings, and a plowed zone.

Substantial prehistoric as well as historic materials are present at Keys Ranch (Warren and Swope 1998). In Fall 1996 and in summer 1998, archeological excavations were conducted at the Huntington Mill, Adobe Barn, G- 11- 1, Ram on Rocks site, road cut, Rockshelter 1 site and Rockshelter 2 site (including pictographs). These indicate a

major late period (dates?) prehistoric presence. Prehistoric items found included projectile points, flakes (chert, jasper, chalcedony, andesite, rhyolite, quartz, and obsidian), charcoal, potsherds (rim and body), manos and manuport fragments, pestle fragments, bone fragments, scrapers, a possible pendant, and other materials. Historic objects included crucible fragments, adobe, bricks, cloth, leather, plastic/vinyl, clear and colored (aqua, amethyst, brown, green) glass, bone, metal fragments, grommets, nails, etc. A metate was found at the Adobe Barn site (Warren and Schneider 1997b, Warren and Swope 1998). Cow Camp contains pictographs and rock cairns (Greene 1983).

The following archeological sites are located within the Keys Ranch vicinity including Barker Dam, Wall Street Mill, Desert Queen Mine, and Cow Camp: CA- RIV- 26, CA- RIV- 209, CA- RIV- 902- 908, CA- SBR- 309, CA- SBR- 311- 312, CA- SBR- 735, CA- SBR- 744- 746, CA- SBR- 762, CA- SBR- 7168/H (prehistoric and historic), CA- SBR- 7173, CA- SBR- 7177, CA- SBR- 7181, and CA- SBR- 7195H (historic).

Keys Ranch Historic Entrance Road

Exposed by the construction of the entrance road, the cross section of the midden (SBR- 746) passes through a sequence of uses. In an initial evaluation of the midden stratigraphy, park staff indicated that initial review by Warren and Schneider indicated four primary layers. The bottom is sterile soil. Above the layer of sterile soil is a midden which in turn is covered by mill tailings. The mill tailings, in turn, are covered by a plowed zone containing organic matter that would have been typical of the rich organic material Keys would excavate from the bottom of the reservoirs to fertilize his crops. This information will be confirmed when the report by Warren and Schneider is released for review (NPS 2004).

Barker Dam

Twenty prehistoric sites were recorded in the Barker dam area in a surface reconnaissance survey made by O'Neil in 1968 (King 1975). This survey states that the twenty prehistoric sites were possibly associated with Serrano groups from post 1,000 AD to post contact periods. "Ten of these have middens, while others are concentrations of surface material, grinding sticks and/or rock art." The density of these sites increases with proximity to the historic dam and includes 11 petrographic element types and 27 subtypes. One of these images was pecked and painted over by the Disney Studios in the 1960's for "cinematic effect" during a film shoot (site #CA- RIV- 906). This information is documented on site maps in the park archives (NPS 2004).

Ethnography

NPS (2004) note: The vicinity of Joshua Tree National Park was prehistorically occupied by the Serrano, Chemheuevi, and Cahuilla tribes, whose influence can be found throughout the region and is documented in a number of publications (King 1975, Parker 1980). The Cahuilla, Chemehuevi, Mojave and Serrano tribes maintain strong interests in the park (National Park Service 1995). According to the GMP, the Agua Caliente Band of Cahuilla Indians, the Cahuilla Tribe of the Morongo Indian Reservation, the Fort Mojave Tribe, the Chemehuevis and Mohaves of the Colorado River Indian Tribes, the Serrano Tribe of the Morongo Indian Reservation and the Twentynine Palms Band of Mission Indians are in regular contact with the park and want to gather traditional plants for food, medicine and personal crafts; and to meditate and pray in a sacred area; or study the archeological and ethnographic artifacts in the park collections to understand and pass on their heritage.

According to McCutchen (2001), although the Keys Ranch is primarily known for its historic significance, extensive use by Native Americans has been documented. In 1992, the park became one of the first units of the National Park System to initiate and complete NAGPRA- related collections management (NPS 2005a:15). The park repatriated the cremated remains of 12 individuals along with their associated funerary objects to local tribal groups. In 2000, an additional funerary object was found and repatriated by local tribes. Repatriation ceremonies were conducted within the boundary of the restricted ranch area and reburial of the remains and objects occurred in undisclosed locations. Confidentiality regarding the ceremonies and site has been maintained by the park at the tribal groups' request.

Museum Collections

According to the park's Museum Management Plan (NPS 2005a: 20), museum collections within parks have four primary functions:

1) Documentation of physical resources and their history of protection in the park;
2) Physical preservation and protection of resources, including the preservation of information about the individual item and the resource as a whole;
3) Research – to determine background information and for providing more information about the objects and/or the park as a whole; and
4) Public programs – using collections to provide information to the public through exhibits, publications, interpretive programs and other means including electronic access through websites, etc.

The park museum collection contains over 180,000 museum objects, including materials from the estate of William F. Keys (Desert Queen Ranch Collection) which were added to the Museum Collection in 1976, and those later donated by family members and acquaintances. According to the Museum Management Plan, "objects from the ranch were chosen for the collections by a Western Regional office and Harpers Ferry Center team based on uniqueness and risk of theft. Small objects were cataloged and brought to the storage area at park headquarters, while larger objects were cataloged and left on site. Objects and structures left at the ranch were managed according to the practice of "benign neglect" until the early 1990s when stabilization/preservation projects were started (NPS 2005a: 14)."

In 2002, a collections conditions survey was completed for the wooden objects on site at the Keys Ranch. The following year, basic stabilization work was done on the four wagons at the site (NPS 2005a: 17).

Although there remain objects cataloged in the museum collection at the Keys Ranch, according to the park's Museum Management Plan (NPS 2005a: 61), the ranch should not be considered a museum space because the following deficiencies cannot be eliminated:

- The park cannot provide even the basic levels of security and preservation required for the management of museum collections at the Keys Ranch site.
- Even if the park had the funding and staffing, the structures and technology necessary to implement this would alter the integrity of the historic district.
- Without intervention, the objects at the ranch site will continue to deteriorate, disappear by theft and continue to be moved within the site, altering the historic appearance of the site
- Major site alteration has already occurred through park "clean- up" and organization projects.

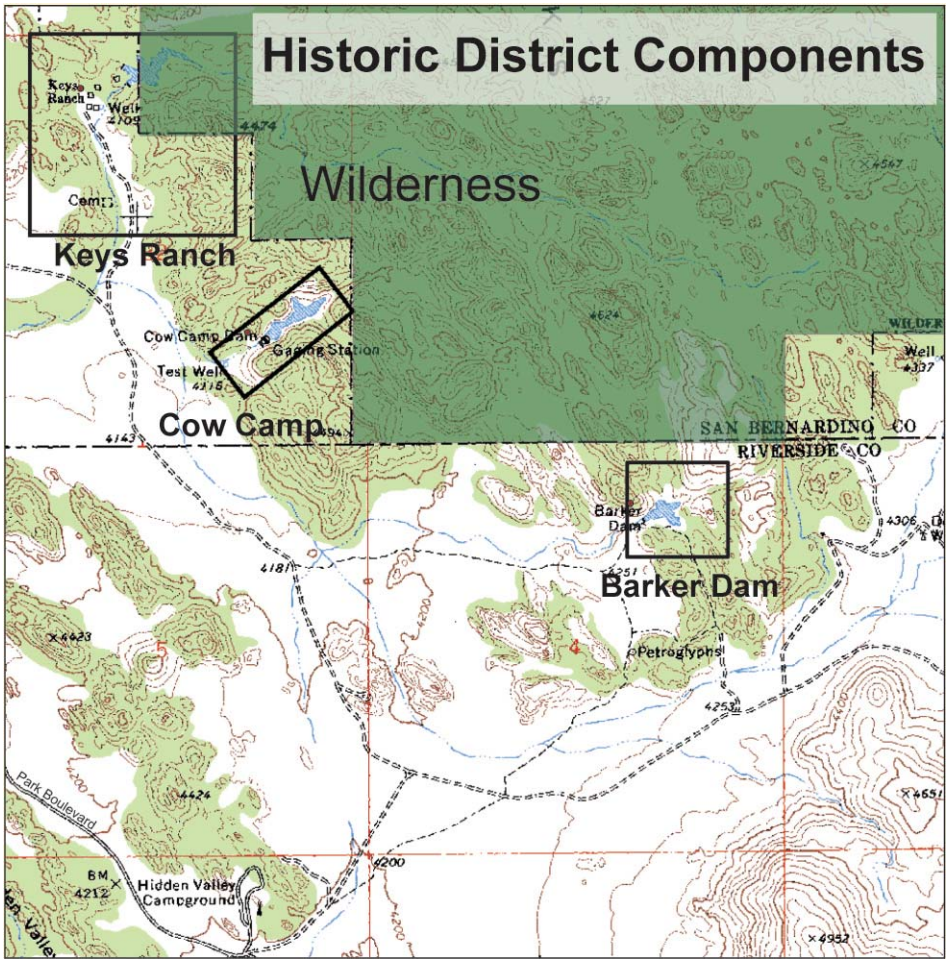
According to the Museum Management Plan (NPS 2005:64), a strictly "museum approach" to the preservation and management of resources at the Keys Ranch is impossible due to the lack of funding and staff, and the factors of distance, environment and landmark status.

Historic Structures/Cultural Landscapes

The Keys Ranch Historic District, (1894- 1969) listed on the National Register of Historic Places is important because it retains integrity as a rural vernacular landscape in the following landscape characteristics: natural systems and features, spatial organization, topography, vegetation, circulation, buildings and structures, cluster arrangement, views and vistas and small scale features (NPS 2004). Of the contributing cultural landscape characteristics, land use is the most severely compromised because the ranch is no longer managed as a working ranch. Instead it is like the ghost town at Bodie State Historic Park, an historic mining town near Bridgeport, California, which is essentially an open air museum where the buildings serve as exhibits (Scott 1999).

NPS (2004) continues: "The associated features of the Keys Ranch still convey the physical character of the ranch as it appeared during the Keys' family occupation. The ranch remains a vivid example of the ingenuity, work ethic and vision necessary to survive in the Mojave Desert. The ranch's location in the desert, and its setting amongst the box canyons on the southwestern edge of the "Wonderland of Rocks," remains the same as

Figure 3:


Historic District Components
Wilderness
Keys Ranch
Cow Camp
Barker Dam
Petroglyphs
Hidden Valley Campground
Park Boulevard
SAN BERNARDINO CO
RIVERSIDE CO

when Keys ranched in the area. Materials, design and workmanship retain their original vernacular qualities and are quite evident, represented by the carpentry, stonework, masonry, and metal work of the buildings and structures throughout the ranch. The association of the ranch with Keys and his family is still apparent and realized through many of the physical attributes and personal items at the ranch."

Status of Keys Ranch Resources

Keys Ranch historic district retains integrity as a historic vernacular ranch although certain features have been compromised and many are in poor condition. The feeling and associations of the Keys Ranch historic district remains intact due to the relatively recent and continuous (1917- 1969) occupation by William Keys and his family and the subsequent park protection of the homestead and associated landscape features. The specific locations of most extant features in the Keys Ranch landscape have not been altered since the end of the period of significance. The surrounding lands, which were used for the grazing of cattle and horses, retain their open character. Structural materials have remained largely intact despite the loss of the original land uses and the need to reinforce and repair various buildings. The dams at Keys Ranch, Cow Camp and the Barker Dam all remain intact although recent engineering reports indicate that reinforcement may be needed (NPS 2004).

The integrity of the historic district has been diminished through:

- the loss of most of the ranch orchard and associated gardens,
- the relocation of some machinery and objects around the ranch following Keys' death
- the installation of a caretaker's trailer site, a restroom and a parking lot within the ranch complex,
- the creation of a parking lot in the round- up area at the Barker Dam (NPS 2004).

As summarized by NPS (2004), "non- contributing buildings and structures have been built by the park service at the southern end of the Desert Queen Ranch subsequent to Keys' death. This part of the ranch was used by Keys for cattle grazing and other ranching activities. The caretaker's trailer site consists of a recreational vehicle provided by the volunteer. Other recent additions include a maintenance work shed, the visitor parking lot and a visitor comfort station. The introduction of these non- contributing structures negatively impacts the historic character of the Desert Queen Ranch. The ranch entry experience for visitors has been altered by locating these facilities in an area which was not historically used for those purposes."

The Cultural Landscape Inventory gives the following rating for the Keys Ranch:

> *Fair: indicates the landscape shows clear evidence of minor disturbances and deterioration by natural and/or human forces, and some degree of corrective action is needed within 3- 5 years to prevent further harm to its cultural and/or natural values. If left to continue without the appropriate corrective action, the cumulative effect of the deterioration of many of the character- defining elements will cause the landscape to degrade to a poor condition.*

The Cultural Landscape Inventory also identifies the management category for the National Park Service to use in administering the Keys Ranch Historic District as "should be preserved and maintained." The Superintendent concurred with this designation when the report was formally approved.

Buildings and Structures

Joshua Tree National Park contains 88 historic structures, and 19 potential cultural landscapes (NPS 2001). There are 16 historic buildings and 21 historic structures on the Desert Queen Ranch, two historic structures at Cow Camp and four at Barker Dam. These include the Main House, Storehouse, Storage Shed, South House (Second School House), North House (School Teacher's House), Key's Ranch Guest House, Schoolhouse, North House Double Outhouse, North House Single Outhouse, Girls Outhouse, Men's Outhouse, Chicken Coop, Disney Shed, Tack House, Machine Shop, Ore [Adobe] Hopper, Water Tower, Windmill, and Huntington Mill, Crane, Arrastra, Joshua Tree Fence, Retaining Wall, Joshua Tree Sculpture, Well Near House, Well [Adobe Pit and Winch] by Wagon Shed, Boundary Fences, Roads and Trails, Irrigation System, Cave Shelter, Outhouse Ruins, West House Ruins, Chilean Mill Ruin, 5- Stamp Mill Ruin, Adobe Fireplace Ruin, and Adobe Barn Ruin (See Appendix 2: Keys Ranch List of Classified Structures).

All of the buildings at the Keys Ranch "are simple "single- thickness" board sides, floors, and roofs, with no foundations except for some small boulders under the corners. The machine shop is the only structure varying from this style of construction and is built from timbers and corrugated sheet metal (NPS 2001b)." Linda Green (1983) stated "NPS cultural resources specialists have determined that any attempt at restoration would result in a resource in much better condition than the original structures and therefore would be an inaccurate representation of the original homestead." Spearing (1999) goes on to state that: "The buildings are mostly unpainted frame, with some adobe and stone used. Most of the building materials were scavenged from abandoned mines and homesteads. They are piecemeal and patchwork assemblages with no foundation, comfortable, but insubstantial and certainly not executed in any recognizable architectural style." Gordon Chappell (Regional Historical Architect) (1975) identified the buildings as "a group of old, poorly constructed and disintegrating structures, none of them possessing architectural significance." Nonetheless, or perhaps because of it, the buildings and structures contribute to the Keys Ranch Historic District.

Ornamental Vegetation

Although the park has replanted some of the orchard and remnant vegetation around the ranch, it was unclear to NPS (2004) if the species or locations were historically accurate. In further discussions with the park, however, the park used a map of the location and type of fruit tree as identified by remaining family members. Fruit type and variety was matched to what the family recalled. As a result, the following tree species were planted: royal and Moorpark apricot (*Prunus armeniaca*), Jonathan, Baldwin, and Gravenstein apples (*Malus pumila*), Whitney crabapples (*Malus sp.*), almond (*Prunus dulcis*), peach (*Prunus persica*), Italian prune (*Prunus domestica*), and Bartlett, Anjou, and sickle pears (*Prunus communis*). Replanted trees were obtained from a company specializing in historic tree stock. Placement in the orchard was as close as possible to the map. Of these, only a few survive. In any case, the recent plantings by NPS as well as the three historic pear trees, giant reed (*Arundo donax*) clump and two cypress trees were considered by NPS (2004) as contributing in the CLI. And it was reported that the vegetation that supported the ranching operation retains integrity. However, individual features of the ranch landscape, such as the orchard, are in poor condition. The vegetable gardens are no longer maintained as gardens, but some are kept clear of weeds and native vegetation to demonstrate how Keys used the land.

Circulation

Despite the recent modifications that have been made to the road and trail systems and the addition of a caretaker's trailer site, maintenance shed and visitor parking, the unpaved roads and trails throughout are still contributing circulation elements both within and between the various components of the ranch complex (NPS 2004)

Wilderness

The vast majority of the land in Joshua Tree National Park is designated by law as wilderness, either by the act of October 20, 1976, or the act of October 31, 1994. The Wilderness Act of 1964 describes the purpose of wilderness designations, which is to preserve lands in their natural condition "for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness."

The Wilderness Act defines wilderness as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain, . . . an area of undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions . . ." The Wilderness Act also generally prohibits motor vehicles, motorized equipment, mechanized transport, motorboats, permanent roads, temporary roads, landing of aircraft, commercial enterprises, and structures and installations. The act contains some limited exceptions to these prohibitions.

Park wilderness includes an array of undisturbed lands including those in both the Mojave and Colorado deserts. Park wilderness values include natural, ecological, geological, cultural, scenic, scientific and recreational opportunities. Natural quiet and natural darkness are also considered wilderness values.

Natural Resources: Park wilderness offers a wide array of scenic, natural and ecological values. Park wilderness is and has been an ongoing object of scientific study. These resources afford excellent opportunities to study ecosystem structure, function, processes and components across the breadth of this desert landscape.

Cultural Resources: Park wilderness cultural resources are also outstanding. The park's human history is spread over the past 7,000 – 10,000 years and offers glimpses into the distribution of people across a high desert landscape over centuries of ecological changes in climate and topography.

Recreational Experiences: Park wilderness also offers a range of recreational experiences – including camping, hiking, rock climbing, backpacking, photography, and picnicking.

Interpretation / Visitor Experience

Located within 2- 3 hours of Los Angeles and Las Vegas and just north of Palm Springs, the park's visitation patterns rise and fall with the seasons, with the busiest visitor use occurring in the spring wildflower season. Visitors come to the park to bird- watch, backpack, hike, camp, horseback ride and rock climb. The park is recognized worldwide as a climbing destination and has more than 4,500 established climbing routes concentrated with about 100,000 acres in the western part of the park. The presence of nearby large cities has resulted in a park that is relatively easy to access as well as a park that must face the problems associated with urban development along its boundary (NPS 1995).

There are three main entrances to the park, including at Twentynine Palms (headquarters/ primary visitor center), Joshua Tree and Cottonwood Oasis (visitor information). In addition, there are two minor (non- connecting) entrances over paved roads (Black Rock Canyon and Indian Cove) and several non-paved road entrances (La Contenta Road, Berdoo Canyon Road, Black Eagle Mine Road, etc.).

Annual visitation has increased approximately 135 percent in the last 20 years, from approximately 548,000 in 1980 to almost 1.3 million in 2001 with a peak in 1998 of over 1.4 million (NPS 2002a). In that time, the park has gone from a park that appealed to visitors primarily from nearby states to a park that attracts visitors from all over the world. On peak weekends in fall, winter and spring, it is not uncommon for the parks over 500 campsites to be filled to capacity. In fact, about half the annual visitation takes place between February and May (NPS1995). Although the park experiences a noticeable decline in visitors during the hot months of June, July and August, summer visitors account for approximately 16 percent of park visitors.

An April 2004 visitor survey (Le *et al.* 2004) found that most visitors toured the park in small groups of 2 (45%) or 3- 4 (25%) people. Of these most (58%) were family groups, 24% were comprised of groups of friends and 11% had both family and friends. Most (59%) visitors were between the ages of 26 and 60, while children aged 15 and under comprised 19% of park visitors.

As noted in the previous visitor survey (April 1991), more than three- fourths (76%) of visitors were from California. Washington, New York and Arizona were the next highest states of origin. Approximately 8 percent of visitors were from 18 other countries.

Most visitors to Joshua Tree spent 2- 3 days (72%), with 54% of park visitors staying overnight either in the park (80% tent camping) or outside the park (69% in a motel/lodge/cabin).

Perhaps most revealing for the future of Keys Ranch, eight percent attended ranger- led programs, while 22 percent cited visiting historic or archeological sites and 55 percent cited going on self- guided trails.

Of the sites associated with Keys Ranch, they ranked 6th (Barker Dam 34%) and 10th (Keys Ranch 14%) on a list of most visited sites. Other Keys- related sites visited included Keys View (20 mentions) and Desert Queen Mine (4 mentions).

Keys Ranch Interpretation

Keys Ranch Tours

Keys Ranch tours are currently offered daily during the busy visitor season (winter and spring) , with fewer tours during less busy seasons (summer and fall) and are limited to 25 visitors per tour. When tour sign- ups at the visitor center do not reach 25 people, the park accepts visitor payment at the gate (staging) until the maximum number is reached. These procedures are explained to visitors hoping to "pay at the gate." At the gate, if there is room, visitors are given an envelope to pay for the tour and instructed to place it in an "iron ranger" (fee collection can) in the parking area. When tours are full, visitors are invited to join the next tour. A sign indicating the time of the next available tour is posted on the gate if there are openings. Accommodations are also made for groups during peak visitor seasons.

Education Program

The education program offers on and off- site curriculum based programs and lesson plans (including a computer- based *Teaching with Historic Places* lesson plan) for both 4th and 6th graders that meet both California and national education mandates. Approximately 60- 70 programs are offered annually to approximately 450- 600 students. Programs are limited to 20- 30 students and one per day due to staff time. In addition the education program annually turns down requests for school programs (75 in 2001) (NPS 2002a).

According to Spearing (1999), the ranch's picturesque setting, its ability to impress upon visitors the realities of life in the area in the not- too- distant past, and the curiosity to see the site first hand, indicate that the ranch should be used interpretively as long as possible.

Park Operations

Security/Safety

Chappell, Cox and Kelly (1974) summed up some of the issues associated with the difficulty of ensuring safety and security at Keys Ranch. "Keys Ranch has been accurately described by one observer as 'a magnificent junk pile.' If the Ranch were to be cleaned up to the point that it was neat and picturesque, or even to the point where it was safe for visitors, it would not accurately represent the appearance during Keys' occupancy. If it is opened to visitors without being cleaned up, it possesses many safety hazards and 'attractive nuisances' aside from the question of structural integrity of the buildings. If opened to visitors with valuable historic artifacts left unsecured around the property as Keys had them, it would prove difficult to control theft."

While it is obvious that the ranch has been opened to controlled visitor use and that clean- up (particularly organization of setting materials) has been accomplished, the Keys Ranch continues to present issues of safety and security for both park staff and visitors.

For Keys Ranch tours and education programs, the "staging" area at the gate has worked well, even during the peak season. The gate also helps keep a safe distance to protect the security of the Keys Ranch. When possible, park staff have visitors car pool from the gate to the ranch parking area.

Resource Protection

Resource protection includes management, preservation, and protection of natural and cultural resources. Activities include research, restoration, endangered species management, Wildland fire management, collections and archives management, historic site protection and facilitating the protection of resources through communication about these activities (NPS 2002a).

Visitor Experience and Enjoyment (Interpretation and Education)

This involves providing visitors with a safe, enjoyable and education experience, including the provision of interpretation, visitor center services, interpretive media, fee management and visitor safety (NPS 2002a).

The park manages information services through two visitor centers and one visitor contact station. Formal interpretive programs include guided walks and talks, tours and campfire programs as well as a formal education

program (see below). Informal interpretation includes roving. Over 4,000 people visited the Keys Ranch on a guided tour in 2001 (NPS 2002a).

Interpretive media include the park map and newspaper, brochures, wayside exhibits, nature trail signs and visitor center exhibits.

Maintenance

Maintenance activities prolong the life of park assets and infrastructure, and include repair, replacement or rehabilitation of buildings, roads, trails, utilities, vehicles, and equipment. Maintenance also includes a range of operational activities, from cleaning facilities to testing water and sanitary systems, to clearing roads of debris (NPS 2002a).

The Business Plan (NPS 2002a) calls for staffing a caretaker/historic maintenance worker position at the Keys Ranch to better protect the area from theft/vandalism.

V. ENVIRONMENTAL IMPACT ANALYSIS METHODOLOGY

The National Environmental Policy Act (NEPA) requires that environmental documents disclose the environmental impacts of the proposed federal action, reasonable alternatives to that action, and any adverse environmental effects that cannot be avoided should the proposed action be implemented. This section analyzes the environmental impacts of two project alternatives on affected park resources. These analyses provide the basis for comparing the effects of the alternatives. NEPA requires consideration of context, intensity and duration of impacts, indirect impacts, cumulative impacts, and measures to mitigate impacts. In addition to determining the environmental consequences of the preferred and other alternatives, NPS *Management Policie*s (NPS 2001A) and Director's Order- 12, *Conservation Planning, Environmental Impact Analysis, and Decision- making*, require analysis of potential effects to determine if actions would impair park resources.

The fundamental purpose of the National Park System, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid or minimize to the greatest degree practicable adverse impacts on park resources and values. However, the laws do give the NPS management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the NPS management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. Impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including opportunities that would otherwise be present for the enjoyment of those resources or values. An impact to any park resource or value (except park operations and visitor experience) may be impairment, however, an impact would more likely constitute impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park;
- or identified as a goal in the Park's General Management Plan or other relevant NPS planning documents.

METHODOLOGY

The environmental consequences for each impact topic were defined based on the following information regarding context, type of impact, duration of impact, area of impact and the cumulative context.

- **CONTEXT**: Setting within which impacts are analyzed – such as the project area or region, or for cultural resources – the area of potential effects.

- **TYPE OF IMPACT:** A measure of whether the impact will improve or harm the resource and whether that harm occurs immediately or at some later point in time.
  - **Beneficial**: Reduces or improves impact being discussed.
  - **Adverse**: Increases or results in impact being discussed.
  - **Direct**: Caused by and occurring at the same time and place as the action, including such impacts as animal and plant mortality, damage to cultural resources, etc.
  - **Indirect**: Caused by the action, but occurring later in time at another place or to another resource, including changes in species composition, vegetation structure, range of wildlife, offsite erosion or changes in general economic conditions tied to park activities

- **DURATION OF IMPACT**: Duration is a measure of the time period over which the effects of an impact persist. The duration of impacts evaluated in this EA may be one of the following:

- **Short-term**: Often quickly reversible and associated with a specific event, one to five years
- **Long-term**: Reversible over a much longer period, or may occur continuously based on normal activity, or for more than five years.

❖ **AREA OF IMPACT**
- **Localized**: Detectable only in the vicinity of the activity
- **Widespread**: Detectable on a landscape scale (beyond the affected site)

❖ **CUMULATIVE**: Cumulative impacts are the effects on the environment that would result from the incremental impacts of the action when added to other past, present and reasonably foreseeable future actions. Impacts are considered cumulative regardless of what agency or group (federal or non- federal) undertakes the action.

❖ **IMPACT MITIGATION**
- **Avoid** conducting management activities in an area of the affected resource
- **Minimize** the type, duration or intensity of the impact to an affected resource
- **Mitigate the impact by**
  - **Repairing** localized damage to the affected resource immediately after an adverse impact
  - **Rehabilitating** an affected resource with a combination of additional management activities
  - **Compensating** a major long- term adverse direct impact through additional strategies designed to improve an affected resource to the degree practicable.

All Impacts Except Special Status Species and Cultural Resources
- **Negligible**: Measurable or anticipated degree of change would not be detectable or would be only slightly detectable. Localized or at the lowest level of detection.
- **Minor**: Measurable or anticipated degree of change would be have a slight effect, causing a noticeable change of approximately less than 20 percent compared to existing conditions, often localized.
- **Moderate**: Measurable or anticipated degree of change is readily apparent and appreciable and would be noticed by most people, with a change likely to be between 21 and 50 percent compared to existing conditions. Can be localized or widespread.
- **Major**: Measurable or anticipated degree of change would be substantial, causing a highly noticeable change of approximately greater than 50 percent compared to existing conditions. Often widespread.

Special Status Species
- **No Effect:** The project (or action) is located outside suitable habitat and there would be no disturbance or other direct or indirect impacts on the species. The action will not affect the listed species or its designated critical habitat (USFWS 1998).
- **May Effect, Not Likely to Adversely Effect**: The project (or action) occurs in suitable habitat or results in indirect impacts on the species, but the effect on the species is likely to be entirely beneficial, discountable, or insignificant. The action may pose effects on listed species or designated critical habitat but given circumstances or mitigation conditions, the effects may be discounted, insignificant, or completely beneficial. Insignificant effects would not result in take. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not 1) be able to meaningfully measure, detect, or evaluate insignificant effects or 2) expect discountable effects to occur (USFWS1998).
- **May Effect, Likely to Adversely Effect:** The project (or action) would have an adverse effect on a listed species as a result of direct, indirect, interrelated, or interdependent actions. An adverse effect on a listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions and the effect is not: discountable, insignificant, or beneficial (USFWS 1998).

Cultural Resources Impacts
Potential impacts to cultural resources (archeological resources, prehistoric or historic structures, cultural landscapes, and traditional cultural properties) either listed in or eligible to be listed in the National Register of

Historic Places were identified and evaluated in accordance with the Advisory Council on Historic Preservation's regulations implementing §106 of the National Historic Preservation Act (36 CFR 800, *Protection of Historic Properties*): by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that are National Register listed or eligible; (3) applying the criteria of adverse effect to affected resources; and (4) considering ways to avoid, minimize or mitigate adverse effects.

Under the Advisory Council's regulations a determination of *no historic properties affected*, *adverse effect,* or *no adverse effect* must be made for affected National Register listed or eligible cultural resources. A determination of *no historic properties affected* means that either there are no historic properties present or there are historic properties present but the undertaking will have no effect upon them (36 CFR 800.4(d)(1)). An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register, e.g. diminishing the integrity (or the extent to which a resource retains its historic appearance) of its location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the alternatives that would occur later in time, be farther removed in distance or be cumulative (36 CFR 800.5(a)(1)). A determination of *no adverse effect* means there is an effect, but the effect would not meet the criteria of an adverse effect, i.e. diminish the characteristics of the cultural resource that qualify it for inclusion in the National Register (36 CFR 800.5(b)).

Thus, the criteria for characterizing the severity or intensity of impacts to National Register listed or eligible archeological resources, prehistoric or historic structures, cultural landscapes, and traditional cultural properties are the §106 determinations of effect: *no historic properties affected*, *adverse effect,* or *no adverse effect*. A §106 determination of effect is included in the conclusion section for each analysis of impacts to National Register listed or eligible cultural resources.

- **No Effect**: The undertaking will not affect a historic property or the characteristics of a property that may qualify it for inclusion in the National Register of Historic Places. The action would also not, based on conditions of approval, likely result in impacts to presently unidentified cultural resources.
- **No Adverse Effect**: An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify the property for inclusion in the National Register. For example, the action may result in diminishing the character- defining features or aspects of a historic structure that make it eligible for the National Register, but the actions are consistent with the Secretary's Standards for the Treatment of Historic Properties.
- **Adverse Effect**: An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association. In other words, the effects on character- defining features or aspects of a historic structure would result in diminishing or removing the characteristics that make it eligible for the National Register of Historic Places and as a result would not be consistent with the Secretary's Standards for the Treatment of Historic Properties.

VI. ENVIRONMENTAL CONSEQUENCES

Table 5
Keys Ranch Impact Comparison Matrix

	Alternative 1 No Action	**Alternative 2 Minimum**	**Alternative 3 Moderate Inward**	**Alternative 4 Moderate Outward**	**Alternative 5 Maximum**
Geology/Soils	No new impacts. Ongoing disturbance from existing activities. Negligible to minor adverse impacts.	Additional specific and systematic actions to preserve area cultural resources would result in additional incremental effects on site soil characteristics. Negligible to minor short- and long-term adverse impacts. Locally major impacts could result from modifications to the dams.	Same as Alternative 2 plus additional negligible to moderate long-term impacts from restoration of historic vegetation, outlying disturbed areas, and negligible to moderate adverse impacts from potential reuse of the adobe hopper, and reconstruction of the barn.	Same as Alternative 3, plus potential new trail construction to link Keys-related sites; modifying and/or increasing site utilities; installation of wayside exhibits; potential construction of a site caretaker residence; equipment storage facility would add localized, long-term minor impacts.	Same as Alternative 3 plus there would be additional impacts to soils from relocation of staging area; mew construction, and relocation of caretaker's trailer site, vault toilet, visitor parking and site restoration. Road construction, reuse of historic road and modification of site features would result in additional use / moderate disturbance of area soils. Impacts would range from minor to moderate.
Conclusion	Area soils have been excavated, moved, added, replaced, plowed, compacted and disturbed as a result of the long-time use of the area for ranching, mining, farming and other activities. Alternatives 1-2 would have negligible to minor, short- and long-term adverse impacts. Alternatives 2-5 would have negligible to moderate, short-and long-term adverse and beneficial impacts. Impacts could range to locally major, under Alternatives 2-5 if dam reconstruction was needed. There would be no impairment of park soil resources or values as a result of the implementation of Alternatives 1-5.				
Cumulative Impacts	Over time, the Keys Ranch soil resources have been heavily modified, including rather extensive importation of soil from excavation within the reservoir areas and areas outside the immediate Ranch area to low lying areas or areas with little soil development at the Ranch to facilitate use of these areas for farming. Future modifications of soil resources to facilitate preservation of the site (except those that may be associated with major dam repair) would likely be minor in contrast to both work that has taken place at the Keys Ranch site and the modification of soils with respect to other work proposed or implemented in the park, such as road rehabilitation, and therefore likely would not be evident to most visitors.				
Water Quality and Water Quantity	No new impacts. Ongoing disturbance from existing activities. Negligible to minor adverse impacts.	Impacts of Alternative 1 plus negligible to minor impacts to water quality and negligible impacts to water quality from added use of water for re-use / restoration of the irrigation system; orchard watering; irrigation to increase fuel moisture; and for systematic preservation maintenance actions to restore historic structures and buildings.	Impacts of Alternative 2 plus additional short-term water use for reconstruction of adobe barn, restoration of working mills and vegetation. Long-term minor beneficial effects would occur from restoration of native vegetation.	Comprehensive restoration of irrigation system and trail construction would contribute a potential for negligible to minor additional short-term impacts to water quality during construction.	Minor additional short-term moderate impacts to water quality from construction of visitor contact facility; grading / construction of new parking area and vault toilets; increased water storage capacity for firefighting; and comprehensive restoration of historic vegetation.
Wetlands Alternatives 1-5	No impacts to wetlands. Created wetlands would be retained in vicinity of dams retained to the degree possible taking into consideration visitor safety and historic preservation (all of the dams are listed on the National Register of Historic Places as part of the Keys Ranch Historic District). Because, however, the dams are considered unsafe at this time, it is unknown how long they can be maintained without the need for major repairs.				
Floodplains Alternatives 1-5	The Ranch House and other structures are likely within the regulatory floodplain of an unnamed wash and nearby creek. Because, however, the structure is a historic, pre-existing structure and no occupation of it is planned as a result of the implementation of any of the Alternatives described in this Environmental Assessment, no compliance with Executive Order 11988: Protection of Floodplains is required.				
Conclusion	The Alternatives described in this Environmental Assessment would result in continued use of water for the maintenance of ongoing (Alternative 1-5) and increased (Alternatives 2-5) operations, primarily irrigation and historic structure rehabilitation at Keys Ranch. Short-term (primarily related to new construction) and long-term impacts would range from minor to moderate and could adversely				

	affect water quality and increase water use. Created wetlands at the site would not be affected by proposed actions, however, it is likely that without major rehabilitation/reconstruction, the dams which have retained these wetlands would fail and/or diminish their water holding capacity. There would be no impact to floodplains as a result of any of the actions proposed herein. There would be no impairment of water resources or values as a result of the implementation of any of the Alternatives described in this Environmental Assessment.				
Cumulative Impacts	Over time, a variety of activities at Keys Ranch, including historic mining and grazing, and the conversion of native habitat to a developed area have adversely impacted water quality. While most of the activities that have affected water quality have diminished, it is likely that some residual contamination remains in areas affected by mining; site testing and remediation of contamination when found is ongoing. In addition, changes to water quantity, including the use of water for humans and animals and the unnatural retention of water by the Keys Ranch and nearby Cow Camp and Barker Dam reservoirs continues to modify area resources to an unknown degree. In contrast to the historic modification of area water resources by the presence of Keys Ranch, reservoirs, and other mining settlements, impacts to water resources that would occur as a result of the Alternatives in this Environmental Assessment would be negligible to minor.				
Vegetation	While there would be no new actions that would affect native vegetation resources at Keys Ranch as a result of the implementation of this Alternative, ongoing effects related to the accidental or purposeful introduction of exotic plants (for landscaping or human use) at the site would continue. Ongoing effects would continue to be negligible to minor, ranging to locally moderate.	The continued inventory and removal of non-native invasive species would have a long-term negligible to minor beneficial effect.	The restoration of native vegetation and the development of a vegetation management plan would result in a short- and long-term negligible to minor or moderate beneficial effects by increasing the presence of native species and reducing areas that might continue to be invaded by non-native species. Negligible to minor, ranging to locally moderate adverse effects could occur from the retention of managed invasive non-native species as well as from impacts associated with construction or alteration of facilities.	Most impacts would be similar to Alternative 2; however, new trails and trail segments would be constructed and would have impacts ranging from negligible to moderate, depending on the segment. Other minor to moderate effects would also result from the impacts of facility construction.	Impacts associated with this Alternative would be the same as Alternative 3 above, plus there would be negligible to moderate impacts from the removal of vegetation and site grading associated with the reutilization of the historic road and construction of a new visitor contact facility, along with relocation of the caretaker trailer site, visitor parking and vault toilets.
Conclusion	The impacts of Alternatives 1-5 would be short-and long-term and would range from negligible to moderate. Historic non-native vegetation (garden, orchard and representative crops) could be restored in some alternatives (3, 5). The construction of improvements under Alternatives 4 and 5 would have minor to moderate long-term localized adverse effects on vegetation. Similarly, the restoration of vegetation would have minimal localized beneficial and adverse effects on the ranch site, which despite years of inactive management retains evidence of the disturbance. There would be no impairment of vegetation or values from the implementation of any of the alternatives described in this Environmental Assessment.				
Cumulative Impacts	Beginning with its use by the McHaney brothers for grazing, over time there have been a series of modifications to vegetation in the vicinity of the Keys Ranch site. While effects of the development of the Keys Ranch can be seen, most notably in the change in vegetation in areas previously disturbed by farming and ranching, the native vegetation has begun to invade again and if left will continue to do so. Outside of a few developed areas, the park remains wholly natural, and the impacts of the proposed actions described in this Environmental Assessment – even those which would restore a small degree of the previous development – would have (in comparison to that portion of the park and in comparison to the previous development at the Ranch) minimal (negligible to minor or moderate) impacts.				
Wildlife	Maintaining the dams for their historic significance and as a water source for wildlife and other actions associated with Alternative 1 would continue to result in intermittent, long-term negligible to minor adverse effects on wildlife as a result of noise and disturbance associated with the work/tours and minor to moderate beneficial effects on wildlife that have become	In addition to the impacts from Alternative 1, a decision to retain the dams in some form, would continue to result in a long-term minor to moderate beneficial effect on desert bighorn sheep and other wildlife that have become dependent on the water sources.	In addition to the impacts of Alternatives 1 and 2, there would be negligible to minor beneficial effects from the restoration of native vegetation in previously disturbed areas negligible incremental adverse effects from the reuse of irrigation water that would otherwise be used by wildlife or infiltrate as groundwater. There would also be negligible adverse effects from additional	In addition to the impacts from Alternative 3, there would be some removal of vegetation associated with the construction in this alternative, resulting in short- and long-term negligible to minor adverse effects on habitat and from noise disturbance.	There would be additional impacts from construction, including a small amount of habitat removal, impermeable surfacing and noise and disturbance, causing short- and long-term minor to moderate localized disturbance of wildlife.

	dependent on the water source. During most of the day, most of the year, however, there would continue to be no or negligible disturbance of wildlife.		noise and disturbance associated with the presence of people and their activities at the ranch.		
Conclusion	While there would be no new impacts as a result of Alternative 1 and few as a result of Alternative 2, Alternatives 3-5 propose either replacement construction and/or new construction and would contribute a small degree of (negligible to minor) localized short- and long-term adverse impacts (primarily noise and disturbance and the removal of small areas of intact or previously disturbed wildlife habitat). Retaining water in the dams for wildlife would continue to result in long-term minor to moderate (during dry years) beneficial impacts. Restoration of native habitat would make up for some of the proposed construction (particularly in Alternative 5) where new construction affects areas with moderate previous disturbance (grazing and farming). There would be no impairment of wildlife or wildlife values as a result of the implementation of the alternatives in this Environmental Assessment.				
Cumulative Impacts	Despite the development of the Keys Ranch area and the development of other modern and historic mining facilities throughout the park, the park continues to appear primarily as a natural landscape. As a result, there have been few impacts to native wildlife. Visitor use, however, has resulted in increased noise and activity concentrated in a few areas of the park and occasional habituation of wildlife to handouts or disturbance. Over most of the park, however, these impacts are not noticeable (negligible to minor) and opportunities to see wildlife remain similar to when the park was established (most evident at night and during the cooler hours of the day).				
Special Status Species	No additional impacts on rare, threatened or endangered wildlife. Ongoing impacts from existing activities.	Increased potential for impacts from rehabilitation of structures, new construction and other activities. Impacts avoided or minimized by avoiding areas of habitat and actions that could affect species. Desert Tortoise: Not Likely to Adversely Affect Desert Bighorn Sheep: No effect. Flat-tailed horned lizard: No effect. Coachella Valley Milkvetch: No effect Little San Bernardino Mountains gilia: No effect Other rare species: No effect			
Conclusion	Proposed actions under the Alternatives in this Environmental Assessment would have no effect on the Coachella Valley milkvetch, the Little San Bernardino Mountains gilia or the Flat-tailed Horned Lizard because these species either do not occur in the vicinity of the Keys Ranch or because proposed actions would specifically avoid them. Other sensitive species would also be avoided by proposed actions. Because the Desert Tortoise does occur at the Keys Ranch and vicinity, but because specific actions would be taken to avoid impacts to them, proposed actions may affect, but would be not likely to adversely affect the Desert Tortoise. There would be no impairment of rare plants or wildlife or the values associated with them.				
Cumulative Impacts	Species considered rare, threatened or endangered in Joshua Tree National Park have primarily become that way through development and alteration of habitat outside the park. N o known species have become listed or proposed as a result of actions wholly within the park. Park managers are tasked with treating listed, proposed and rare species as if they were all listed and park actions are routinely evaluated for their potential effects on rare species. As a result, there have been no recent cumulative impacts to rare, threatened or endangered species; however, consultation with the USFWS has recently been undergone for proposed actions associated with the park's Fire Management Plan and for road rehabilitation projects.				
Archeology	There would be no additional impacts to archeological resources.	There would be additional efforts to inventory and monitor historic and prehistoric archeological resources at Keys Ranch and associated sites; to document the results of site testing; and to stabilize known archeological sites, resulting in the potential for long-term negligible to minor adverse effects and long-term beneficial effects.	There would be an increased effort to investigate archeological resources at other areas associated with Keys Ranch to increase the connections in telling the historic and prehistoric human stories linking the development of the Ranch, another long-term beneficial effect.	The construction of trail connections linking Keys Ranch associated sites would result in increased opportunities to adversely affect previously unidentified archeological resources. As specific alignments were developed, these areas would be surveyed for the presence of archeological resources and the strategy identified in Alternative 2 followed should archeological resources be found.	Proposed actions and impacts would be similar to Alternative 3, however under this Alternative, the construction of new facilities and the relocation of existing facilities would result in increased opportunities to adversely affect previously unidentified archeological resources. Because archeological resources have been detected in surveys throughout the Keys Ranch area, additional site testing would occur prior to the construction or relocation of facilities and known existing areas would be avoided.
Conclusion	Impacts to archeological resources would be avoided to the degree possible by conducting additional archeological site testing. Most actions called for by the Alternatives would be in areas previously affected by development of the Keys Ranch. In the event that previously unknown archeological resources are found at proposed development sites, proposed actions would be relocated, if possible, to nonsensitive areas. Proposed actions would have no adverse effect on archeological resources and would not result in				

	impairment of archeological resources or the values associated with them.				
Cumulative Impacts	Because actions would be taken to avoid specific impacts to archeological sites, there would likely be no additional impacts to archeological resources or values and therefore, no contribution to cumulative impacts on park archeological resources. Overall, park development projects have had long-term cumulative adverse impacts ranging from negligible to minor (when archeological resources have been uncovered during surveys for these projects and from the construction of facilities prior to the advent of archeological resources protection laws), coupled with long-term negligible to moderate beneficial impacts from additional opportunities to study archeological resources. Proposed actions under this Environmental Assessment have been designed to continue to contribute to an understanding of prehistoric and historic occupation of the Keys Ranch area and of the park as a whole.				
Ethnography	There would be no additional impacts to ethnographic resources as a result of the implementation of this alternative.	There would be no effect on or impairment of any known ethnographic resources as a result of the alternatives described herein. None propose use where use is not already occurring, nor would any change current Native American use of existing areas. Regardless, it is clear from the number of archeological sites found in the vicinity of Keys Ranch that the area has long been important to Native Americans. As a result, ongoing consultation with affected tribes will continue to occur as specific implementation plans are developed.			
Conclusion	Although areas near the Keys Ranch have been used for the repatriation of human remains found in the park (in conformance with the Native American Graves Repatriation Act), would not be affected by the proposed actions. There would be no impairment of ethnographic resources.				
Cumulative Impacts	No known cumulative impacts to ethnographic resources have occurred as a result of past actions or would occur as a result of proposed actions associated with the implementation of any of the Alternatives in this Environmental Assessment.				
Museum Collections	Implementation of these recommendations would result in a long-term beneficial effect on Keys Ranch and its museum collections. Depending on the number of and reasons for de-accessioning of some of the Keys Ranch collections, there could be negligible to minor adverse effects on those collections.	In addition to the impacts from Alternative 1, there would be additional negligible to minor benefits associated with managing the Keys Ranch collection from the additional actions to preserve and supplement oral histories and from additional display of collections.	Impacts would be the same as Alternative 2. There would be additional beneficial effects from the development of exhibit and historic furnishings plans. Taken together, these actions would improve the management of and possibly add to display of the Keys Ranch Collections, a minor to moderate long-term beneficial impact.	Impacts of Alternative 4 would be the same as Alternative 3, except that the park would place a greater emphasis on working with local community museums, university museums, special and traveling exhibits to display information and artifacts from the Keys Ranch instead of repopulating onsite structures.	Impacts would be the same as Alternative 4 but would build on the park's collections. There would be a focus on accessioning additional objects associated with the Keys Ranch that were unique or representative and that could not be preserved on site.
Conclusion	Alternatives 1-5 would have increasingly negligible to moderate beneficial impacts on the preservation of museum collections associated with Keys Ranch. In addition, they would add valuable information to, increase preservation of (1-5) and add appropriate materials to (2-5) the Keys Ranch Collections. There would be no impairment of museum collections under any of the Alternatives described in this Environmental Assessment.				
Cumulative Impacts	Over time, Keys Ranch museum collections have suffered because of inadequate analysis of the importance of materials from the site. While some unique items have been preserved in the collection for many years, other unique materials have remained at the Ranch. Materials remaining at the Ranch do not now and could never receive adequate care and preservation treatments because they are unsecured and remain exposed to weather, vandalism and the possibility of losing context by being moved. Over time, potential and accessioned collections objects have lost integrity and stability. Alternatives 1-5 would not continue to contribute to these moderate adverse effects. Instead, all call for systematic inventory and then analysis of the items in the collection and the need for their retention there as well as an increased effort to determine their use and importance by establishing relationships with gateway communities, encouraging their display, and by fostering information about them through the gathering of additional oral histories.				
Historic Structures / Historic District	The continuation of current conditions could result in the additional deterioration of Keys Ranch resources, a long-term minor to moderate adverse effect.	The development of the prioritized stabilization and repair strategy and regular conditions monitoring surveys, as well as restoration of some historic vegetation would result in long-term minor to moderate beneficial effects.	Instead of just stabilizing historic buildings and structures as in Alternative 2, systematic repair and/or rehabilitation would occur, resulting in a long-term minor to moderate beneficial effect. Other beneficial effects would result from regular monitoring conditions surveys. In addition, construction of a compatible barn structure within the Historic District to serve as either storage or a visitor contact facility	As in Alternative 3, systematic building stabilization, repair and rehabilitation would occur and would have similar impacts. In addition systematic monitoring conditions surveys and opportunities to restore some interior features of the structures would be pursued. Trail linkages and the installation of a surveillance system could have negligible to minor effects, but would be designed to have no adverse effect	In addition to the impacts from Alternative 4, there would be a series of potentially adverse and beneficial impacts of the rehabilitation needed to make the Ranch House accessible, code compliant and structurally sound. Rehabilitation would include adding a foundation to the structure, securing the building to it and replacing building interior and exterior wood members and finishes as needed to

			would result in minor to moderate beneficial and adverse effects by placing a new structure where one once existed.	on historic resources.	reinforce its design and to add utilities if and where needed. Ultimately, proposed actions would be designed so as to facilitate the required SHPO consultation but would have no adverse effect on the structure or its eligibility for the National Register.
Conclusion	Continued preservation maintenance, including the possible restoration and/or rehabilitation of buildings and structures at Keys Ranch would have no adverse effect on their continued eligibility for or listing on the National Register of Historic Places as part of the Keys Ranch Historic District. Actions that would be undertaken to preserve the structures would be in conformance with the Secretary of the Interior's standards and would include replacement-in-kind of existing and missing features (with adequate documentation) and/or replacement with compatible materials that would reduce long-term cyclic maintenance needs. There would be no impairment of historic resources as a result of the implementation of any of the Alternatives described in this Environmental Assessment.				
Cumulative Impacts	Same as Historic District / Cultural Landscapes below				
Cultural Landscape	Ongoing long-term minor to moderate adverse effects from continuing to maintain non-historic elements and from the gradual disappearance of elements associated with the historic scene.	Same as Alternative 1 plus: long-term minor beneficial effects from restoring portions of Ranch setting and by removing or enhancing compatibility of non-historic elements.	Same as Alternative 2 plus: additional long-term minor beneficial effects from greater emphasis on removing, disguising or relocating non-historic elements and from additional information gathering.	Same as Alternative 3	Same as Alternative 3 and 4 plus moderate long-term beneficial impacts from restoration of historic district by removal of non-contributing elements.
Conclusion	Alternatives 1-5 would have an increasing series of negligible to moderate beneficial effects by removing, relocating or enhancing compatibility of some non-contributing elements of the historic scene and by repairing, rehabilitating or restoring features of the historic district. There would be no adverse effect from proposed actions on the eligibility of any features eligible for the National Register of Historic Places and no impairment of the cultural landscape.				
Cumulative Impacts	Over time, there have been a series of short- and long-term negligible to moderate adverse effects on the historic integrity of the Ranch. Among the effects have been the loss of integrity associated with relocation of structures and materials at the Ranch; the deterioration of historic buildings and other elements of the historic scene; the encroachment of vegetation; the loss of historic vegetation; and the placement of non-historic, incompatible elements, such as the water tanks, visitor parking, vault toilets, and memorial fruit trees. Compared to these short- and long-term adverse impacts, Alternatives 2-5 would have primarily minor to moderate beneficial impacts and would restore the park's long-term commitment to preserve Keys Ranch Historic District resources.				
Interpretation	If continued funding, long-term negligible beneficial effect from continuing to provide park visitors with opportunity to experience Keys Ranch. Short- to long-term minor beneficial effect from maintaining education program. Negligible to minor beneficial effects from ongoing availability of interpretive materials.	Long-term negligible to moderate beneficial effects from expansion of interpretive opportunities and from site preservation and its effect on interpretation and the experience of visitors to Keys Ranch.	Increased beneficial effects from additional opportunities for Keys Ranch interpretation through establishing partnerships to restore ranch features and equipment and from increased tour opportunities.	Same as Alternative 3, with some restoration occurring at the Ranch and the rest in linking the Ranch to related sites. Additional opportunities for non-site visitors to experience Keys Ranch.	Additional long-term beneficial impacts from greatly expanded interpretive opportunities from restoration of additional equipment and buildings. Increased tours and partnerships and focus on bringing the Ranch experience to outside visitors (through fairs, etc.).
Conclusion	Alternative 1 would result in no new impacts as a result of improvements in interpretation or visitor access and circulation. Alternative 2 would result in low-cost minor improvements in interpretation beyond permanent funding of the current program, but few improvements in visitor access and circulation, which would generally be the same as in Alternative 1. Alternatives 3 and 4 would begin to result in moderate improvements in the interpretive program, with a host of new programs, services and the provision of information. Alternative 4 would go a step beyond the proposed improvements in Alternative 3 and result in linking the sites associated with Bill Keys throughout the park and would also increase partnerships and programming in the gateway communities. Alternative 5 would result in improvements to the park's interpretive programming similar to Alternatives 3 and 4, but would have greatly increased modifications to visitor access and circulation that would result in major changes to the visitor experience.				
Cumulative Impacts	Management of Keys Ranch by the park has changed over time, increasing its protection and prominence as a park cultural resources site. Management has evolved from little understanding of the significance of the resource, to placement of the resource within the context of its significance within the park and community, including its listing on the National Register of Historic Places. As a result, of this evolution in understanding, different experiences over time have been provided to park visitors, including				

	caretaker management of the site, fostering of routine and special guided tours of the site during the nation's bicentennial, to the present day program of reserved guided tours. During this same time, access to the ranch has been occasional, by invitation only and regular, through peak season ranger guided tours. Under the Alternatives proposed in this Environmental Assessment, there would continue to be gradual (Alternative 2) to moderate (Alternatives 3 and 4) to sweeping changes in interpretation and to a lesser degree (except for Alternative 5) changes in visitor access and circulation. Regardless of which alternative is selected for implementation, the proposed changes would conform to the park and public's vision for management of Keys Ranch and would have beneficial impacts that would systematically transform the management of the Ranch from a little-known site to one of the park's premiere cultural resources attractions, emphasizing the continuum of its history of development, from its use by Native Americans, to its settlement by Bill Keys and his family through its management by the National Park Service, a long-term moderate beneficial impact on interpretation and visitor experience, in contrast to the occasionally adverse impacts conferred by inadequate analysis of the significance of the resource over time.				
Visitor Access and Circulation	Long-term minor beneficial effect on visitors able to experience Keys Ranch coupled with long-term minor to moderate adverse effect on those visitors unable to experience Keys Ranch.	Long-term minor beneficial effect from ability to experience Keys Ranch in ways other than just guided tours coupled with continued negligible adverse effect on visitors unable to obtain a Ranch tour.	Added opportunities (film, additional Keys exhibits, etc.) to experience the Ranch without visiting it would increase opportunities for visitor access, a long-term beneficial impact. No or negligible to minor beneficial impacts from reassessment of administrative closure area.	Same as Alternative 3, with more opportunities for visitors to get Keys Ranch experience remotely (potential Barker Dam kiosk, trails, wayside exhibits, etc.).	Long-term moderate beneficial effects from modified visitor experience that would include access from the historic road, a new visitor center, and a restored walk-through Ranch House with greater access for all visitors. Slight potential for negligible adverse effects from crowding.
Conclusion	Same as Interpretation above				
Cumulative Impacts	Same as Interpretation above				
Wilderness	No new impacts.	No permanent impacts to wilderness resources. Negligible to minor temporary impacts (noise and disturbance) associated with rehabilitation of historic structures, construction of trail linkages, and construction or relocation of facilities.			
Conclusion Cumulative Impacts	Negligible to minor temporary impacts. No additional cumulative impacts and no impairment of wilderness or wilderness resources.				
Park Operations	No new impacts. Continued long-term negligible beneficial effects from administration, use of caretakers, implementation of Fire Management Plan recommendations, non-systematic preservation maintenance, and occasional treatment of non-museum objects at Ranch. Potential short- to long-term moderate adverse effects if interpretation or education programming was discontinued due to temporary funding shortfalls.	Minor to moderate adverse effects on staff from additional responsibilities, need for increasing funding and hiring of partnerships coordinator, coupled with moderate beneficial effects on ability to protect Keys Ranch resources.	Same as Alternatives 1 and 2, except minor adverse effects from additional administrative needs to seek funding, to encourage partnerships, to restore Ranch buildings and equipment, and from expanded interpretive program. Expanded beneficial effects from systematic attention to preservation of Keys Ranch resources.	Same as Alternative 3, plus additional staff utilization to expand Keys Ranch interpretive program outside of park. Long-term beneficial and short and long-term adverse impacts from construction of site manager residence.	Expanded beneficial impacts on Keys Ranch resources, coupled with long-term adverse, but ultimately beneficial impacts regarding park's ability to sustain high degree of operations / resources at Keys Ranch.
Conclusion	Although there would be short-term minor to major impacts on park operations under all Alternatives, except Alternative 1, these impacts would, pending an influx of funding and staffing as needed to support the operations, all result in better preservation of Keys Ranch resources. In time, the short-term adverse impacts on park operations would give way to long-term beneficial impacts, providing initial efforts to systematically identify preservation priorities, internal and external funding sources and staffing could be sustained. Alternative 2 would require the least dramatic changes to existing park operations, followed in order by Alternatives 3, 4 and 5. Though major changes in park operations, such as the type and frequency of interpretive programming, what gets restored at Keys Ranch and beyond, what degree of community involvement is required to supplement National Park Service efforts, and what structures are retained, improved, relocated, constructed or reconstructed varies among the alternatives, all would also result in these long-term minor to moderate improvements in park operations.				
Cumulative Impacts	Over time, as the management of Keys Ranch has alternat**e**ly slowed and intensified as various park planning efforts were initiated and then placed on hold, often due to varying assessments of the significance of Keys Ranch resources by a variety of National Park				

	Service and other contracted staff, the resources have been inadequately managed and have suffered negligible to moderate deterioration that has begun to be remedied more consistently by the park, following additional evaluations of the historic structures and analysis of appropriate preservation maintenance/rehabilitation treatments. Proposed actions under any of the Alternatives described in this Environmental Assessment would build upon the initial preservation work at the Ranch and in addition would give added priority to highlighting both the interpretive and historic values associated with the Ranch and other Keys-related resources in the park. Alternative 1 would result in negligible beneficial impacts, while Alternatives 2-4 would result in minor to moderate beneficial impacts and Alternative 5 in moderate to major beneficial impacts compared to existing conditions.

Soils

Impacts of Alternative 1

There would be no additional impacts to soils as a result of this alternative. Ongoing impacts as a result of infrequent structure rehabilitation efforts and continued use of the Keys Ranch would include occasional mixing, trampling and other disturbance of soil resources from periodic replacement of building components, orchard maintenance, road grading, and continued use as an interpretive destination. Occasionally, additional archeological investigation, periodic minor repairs to the dams, and non- native plant removal would also have the potential to disturb soil resources. Depending on the results of current and future investigation of contaminated soils associated with past mining activities, additional soil testing, excavation, and importation could occur to remediate those areas. Impacts to soils would continue to be negligible to minor, long-term and adverse.

Impacts of Alternative 2 (including Actions Common to All)

In addition to the ongoing effects of the continued use of the site as noted above under *Impacts of Alternative 1*, additional specific and systematic actions to preserve area cultural resources would occur under this Alternative and would result in additional incremental effects on site soil characteristics. Taken together, these actions, which would primarily consist of preservation maintenance of site cultural resources would be limited in scope and effect, but would likely include the insertion or repair of building foundations, replacement in kind of building features and components of historic structures, and other actions to preserve site features and characteristics. Included amongst these actions could be the relocation or modification of the radio tower and/or other features incompatible with the preservation of the Keys Ranch Historic District; irrigation system repair (including replacement of individual components); maintenance of historic orchard components; non- native invasive plant removal; improved fire protection strategies such as removal of some vegetation adjacent to buildings or within the site to increase fire protection; stabilization of the mills; and visitor use circulation improvements. Most actions called for by this Alternative (which would primarily focus on additional information gathering or inventory and additional evaluation of the significance of Keys Ranch resources and the improvement of incompatible elements of the site as well as systematic historic preservation) however, would have limited additional negligible to minor short and long- term adverse effects on soils.

Impacts of Alternative 3

In addition to the actions noted above under the impacts of Alternatives 1 and 2, this Alternative could include the restoration of historic vegetation, and restoration of outlying disturbed areas as well as the potential reuse of some site features, like the adobe hopper for demonstration purposes. Reuse of the adobe hopper and possible rehabilitation for contemporary use of the adobe barn could result in the importation of soil and/or use of park soil resources, a moderate long- term adverse effect or could rely on spoils generated but not disposed of from another project (such as road clearing or repair) or from materials stockpiled at the Pistol Range Pit (in Wilson Canyon in the Mojave Desert portion of the park) (a minor beneficial effect). Appropriate materials would be those that originated from areas in the vicinity of Keys Ranch. Use of these materials would need to ensure that no contamination of the Ranch area would occur as a result of non- native invasive plants parts or seeds that could be in them. As necessary treatment of the materials and equipment used in procuring them would be cleaned to prevent the importation of invasive species. This possible rehabilitation of the barn from locally made adobe could result in the additional excavation and use of soil. Restoration of historic vegetation, and outlying disturbed areas would result in negligible to moderate long- term beneficial effects, as vegetation increased and the potential for soil erosion diminished.

Impacts of Alternative 4
In addition to impacts described above under Alternatives 1- 3, this Alternative could include new trail construction to link Keys- related sites; modifying and/or increasing site utilities; and the installation of additional wayside exhibits at the Ranch site and other Keys Ranch sites in the vicinity as well as the potential construction of a residence for the site caretaker (approximately 1,200 square feet with associated parking, water and propane tanks) and a facility to store maintenance equipment. Together, these adverse impacts would be localized and long- term and minor, resulting in a small degree of additional soil excavation and vegetation removal (associated with trail development, new construction and utility modifications). The use of appropriate techniques, including the construction of any needed drainage features associated with the creation of trails connecting Barker Dam and the Wall Street Mine area to the Desert Queen Mine and Keys Ranch as well as to Keys View and Joshua Tree or modifications to site utilities (installation of power) would ensure that proposed actions would result in little additional soil transport (erosion). Although this alternative would also include the construction of an interpretive kiosk at Barker Dam, it is likely that this kiosk would be constructed in areas already affected by paving and would therefore have a negligible incremental effect on area soils.

Impacts of Alternative 5
This alternative would result in the greatest additional impacts (minor to moderate, ranging to localized major) as a result of the proposed relocation of the Keys Ranch staging area, the construction of a small, new visitor contact facility and the relocation of the caretaker's trailer site, vault toilet and visitor parking and site restoration. Road construction, reutilization of the historic road and modification of site features, such as fencing and restoration of additional features of the Keys era would also result in additional use and moderate disturbance of area soils.

Construction of a small visitor contact facility (approximately 1,600 square feet) would result in the disturbance of additional soil for foundation and utility placement. As mentioned above, the possible construction of the new visitor contact facility from locally made adobe could result in the additional use of soil. In addition, relocation of the vault toilet and visitor parking facility would impact an additional estimated 2,500 (vault toilet and parking) of area soils. Construction of these facilities would result in a small degree of additional impermeable surfacing. Restoration of the site following construction, including landscaping with salvaged plant materials would limit the impacts of grading and soil compaction. The installation of adequate drainage features, such as culverts and appropriate grading would limit the transport of soils during infrequent heavy rainfall. As appropriate given expected use and site conditions, hardened surfaces would be either paved or unpaved.

Once funding was secured, major repair and/or reconstruction of the dams associated with Keys Ranch could require moderate to major excavation and importation of soils and fill materials to facilitate the continued preservation of these reservoirs, a short- and long- term, localized major impact on area soils.

Summary: There would be no new effects on soils as a result of Alternative 1. Effects of the actions under Alternatives 1- 2 would be negligible to minor and under Alternatives 3- 5 would be negligible to moderate, but could range to major if significant dam repair were needed, and would have little additional impact on area soils, which have been excavated, moved, added, replaced, plowed, compacted and disturbed as a result of the long- time use of the area for ranching, mining, farming and other activities. There would be no impairment of park soil resources or values as a result of the implementation of Alternatives 1- 5.

Cumulative Impacts: Over time, the Keys Ranch soil resources have been heavily modified, including rather extensive importation of soil from excavation within the reservoir areas and areas outside the immediate Ranch area to low lying areas or areas with little soil development at

the Ranch to facilitate use of these areas for farming. Where modified, area soils continue to show the effects of that modification, including the presence of furrows associated with farming, the effects of trampling associated with grazing and site circulation patterns, and the effects of moving large quantities of rock for mining and site development. These disturbances are also evident as a result of the differences in vegetation structure, composition and age. As a result, any future modifications of soil resources to facilitate preservation of the site (except those that may be associated with major dam repair) would likely be minor in contrast to both work that has taken place at the Keys Ranch site and the modification of soils with respect to other work proposed or implemented in the park, such as road rehabilitation, and therefore likely would not be evident to most visitors.

Water Resources

Impacts of Alternative 1

Although there would be no additional impacts to water quality or increased use of water (water quantity) as a result of the implementation of this Alternative, there would continue to be impacts to both water quality and quantity as a result of ongoing operations at Keys Ranch. In addition to the continued use of water for periodic watering of the orchard, emergency provision of water to visitors, provision of water for the site caretakers, continued use of water by wildlife (particularly waterfowl and bighorn sheep) and occasional use of water for firefighting, water would continue to be needed periodically to facilitate the repair of historic structures and buildings, including the well, irrigation system and rock walls. These uses of water would continue to result in a minor impact to both water quality and quantity, while the retention of water in the reservoirs would continue to result in an unknown (likely minor to moderate) disruption of natural ground and surface water flow in the vicinity of Keys Ranch and beyond.

Impacts of Alternative 2 (including Actions Common to All)

In addition to the impacts of Alternative 1 described above, Alternative 2 would result in the increased use of water for re- use/restoration of the irrigation system to facilitate watering of the orchard; for possible irrigation to increase fuel moisture in the vicinity of historic structures; to restore missing landscape features (ornamental trees); and for increased, systematic preservation maintenance actions to restore or rehabilitate historic structures and buildings. In addition, water may be needed for possible onsite curation of historic non- museum objects. These impacts would consist of additional short- and long- term negligible to minor impacts to water quantity and negligible impacts to water quality.

Impacts of Alternative 3

In addition to the impacts from Alternative 2, Alternative 3 would include moderate short- term additional water use for rehabilitation of the adobe barn and restoration of the windmill to assist in producing irrigation water; as well as minor long- term increased watering of the orchard and restored missing historic vegetation; and negligible to minor use of water for potential restoration of working mills. As non- historic denuded areas were restored to native vegetation as called for by this Alternative, water would be retained longer in the vicinity, resulting in slower infiltration, a negligible beneficial effect on water quality.

Impacts of Alternative 4

In addition to impacts noted in Alternative 3, comprehensive restoration of irrigation system and trail construction would contribute a potential for negligible to minor additional short- term impacts to water quality during construction which would be mitigated by best management practices.

Impacts of Alternative 5

Alternative 5 would contribute the potential for minor additional short- term moderate impacts to water quality from the construction of a visitor contact facility, the grading and construction of a new parking area and vault toilets. In addition, additional water use could occur with a possible increase in water storage capacity for firefighting (to facilitate a high pressure fire protection system), from additional watering needed for comprehensive restoration of historic vegetation, including the orchard, kitchen gardens and representative agricultural areas. The need for water would not exceed that available onsite in area reservoirs during normal to wet years, but could be difficult to achieve during drought.

Impacts to Wetlands and Floodplains Alternatives 1-5 (including Actions Common to All)
Wetlands: Although there are two natural creeks (occasionally to commonly dry) that flow through the Keys Ranch site and several nearby springs and washes, the historic construction of the three reservoirs located at Keys Ranch, as well as Cow Camp and Barker Dam during Keys's era and before have resulted in the creation of unnatural wetlands (including the lush growth of water dependent vegetation) in the vicinity of these features. These wetlands would not be affected by the actions proposed in this Environmental Assessment.

Under all Alternatives (1- 5), it is likely that these created wetlands would be retained to the degree possible taking into consideration visitor safety and historic preservation (all of the dams are listed on the National Register of Historic Places as part of the Keys Ranch Historic District). Because, however, the dams are considered unsafe at this time, it is unknown how long they can be maintained without the need for major repairs. In spring 2005, the lower Keys Ranch dam developed a leak and water needed to be drained from the reservoir to prevent the possible failure of this structure. While preservation maintenance of each is called for in Alternatives 2- 5, only Alternative 5 calls for the possible reconstruction of these dams, to prevent failure. All call for ongoing evaluation of the ability to safely retain water for historic preservation, wildlife and (as appropriate for Barker and the Keys Ranch dams) recreational or scenic purposes. Under all alternatives, administrative and maintenance actions would be taken as needed to limit the downstream flood hazard posed by the ongoing deterioration of these structures.

Floodplains: The construction and subsequent modification of the Ranch House and nearby structures resulted in an historic need to armor the banks of the creek adjacent to the Ranch House and later to create berms that diverted water away from the house during infrequent periods of high water (flash flooding). The Ranch House and nearby normally dry washes or low flowing creeks in the vicinity of the Keys Ranch are known to have flooded several times during Keys' occupation of the Ranch. The Ranch House and other structures therefore are likely within the floodplain of the unnamed wash and nearby creek and are also located below the Keys Ranch Reservoir, where they would be affected by failure from the Lower Keys Ranch Dam according to BOR analyses. As a result, the park has adopted closure strategies for the Keys Ranch during times of heavy rainfall and full pool conditions in the reservoir and under the strategies contained in this Comprehensive Plan would avoid full- pool conditions in the reservoir. In fact, water is pumped from the reservoir to avoid its overtopping during occasional full pool conditions. In addition a series of inspection and maintenance strategies (see Affected Environment) are used to manage the historic dams. It is therefore unlikely that visitors would be in the area if full- pool conditions were to cause dam failure. Because the Keys Ranch Historic District contains pre- existing structures and no occupation of these structures is planned as a result of the implementation of any of the Alternatives described in this Environmental Assessment and no construction of new occupied structures is planned that would be affected by the potentially hazardous reservoirs, no compliance with the Executive Order 11988: Protection of Floodplains is required. Further, Director's Order 77- 2 does not apply to historic or archeological structures, sites, or artifacts whose location is integral to their significance.

Regardless, the National Park Service will continue to acknowledge the potentially hazardous condition of the Keys Ranch dams by avoiding high concentrations of visitors at the site during unsafe (high water) conditions. In addition, additional research and consultation with the BOR regarding long- term solutions for the dams will continue to be pursued. It is likely that such solutions, when proposed, will require additional environmental analysis.

The potential construction of a replacement barn (Alternative 3), new caretaker facility (Alternative 4) and a small visitor contact facility (Alternative 5) would not be within regulatory floodplains or potential consequences of possible failure of any of the Keys Ranch dams and therefore would have no effect on floodplains and would not be affected by potential dam failure.

Summary: There would be no new effects on water resources as a result of Alternative 1. Alternatives described in this Environmental Assessment, however, including Alternative 1 would result in continued use of water for the maintenance of ongoing and increased (Alternatives 2- 5) operations, primarily irrigation and historic structure rehabilitation at Keys Ranch. Short- term (primarily related to new construction) and long- term impacts would range from minor to moderate and could adversely affect water quality and increase water use. These impacts would be greatest under Alternative 5 and least under Alternative 2, with impacts from Alternatives 3 and 4 in the middle range. Created wetlands at the site would not be affected by proposed actions, however, it is likely that without major rehabilitation/reconstruction, the dams which have retained these wetlands would fail and/or diminish their water holding capacity. There would be no impact to floodplains as a result of any of the actions proposed herein. There would be no impairment of water resources or values as a result of the implementation of any of the Alternatives described in this Environmental Assessment.

Cumulative Impacts: Over time, a variety of activities at Keys Ranch, including historic mining and grazing, and the conversion of native habitat to a developed area have adversely impacted water quality. While most of the activities that have affected water quality have diminished, it is likely that some residual contamination remains in areas affected by mining; site testing and remediation of contamination when found is ongoing. In addition, changes to water quantity, including the use of water for humans and animals and the unnatural retention of water by the Keys Ranch and nearby Cow Camp and Barker Dam reservoirs continues to modify area resources to an unknown degree. In contrast to the historic modification of area water resources by the presence of Keys Ranch, reservoirs, and other mining settlements, impacts to water resources that would occur as a result of the Alternatives in this Environmental Assessment would be negligible to minor.

Native Vegetation

Impacts of Alternative 1

The establishment and continued use of the Keys Ranch over time has resulted in the introduction of the following non- native species found at the site: Lombardy poplar (populus nigra), tumbleweed (*Amaranthus albus*), cudweed (*Gnaphalium luteo- album* and *G. palustrum*), California burclover (*Medicago polymorpha*), sourclover (*Melilotus indica*), and the following grasses: several bromes [*Bromus alopecuros*, *B. hordaceus*, *B. diandrus* (ripgut brome)], tumble or Jim Hill (*Scirpus sp.*), stink grass (*Eragrostis cilianensis*), beard grass (*Polypogon monspeliensis*) , including the following invasive species: grasses [wild oats (*Avena fatua*), cheat grass (*Bromus madritensis*), *B. tectorum*, Chilean grass (*B. trinii*), and Mediterranean grass (*Schismus sp.*)] and forbs: storksbill/filaree (*Erodium cincutarium*), prickly or wild lettuce (*Lactuca serriola*), mustard (*Sisymbrium altissimum*), London rocket (*Sisymbrium irio*), prickly sow thistle (*Sonchus asper*), salt cedar (*Tamarix ramosissima*), and giant reed (*Arundo donax*). (Orchard species are also considered non- native, but not invasive.) While there would be no new actions that would affect

native vegetation resources at Keys Ranch as a result of the implementation of this Alternative, ongoing effects related to the accidental or purposeful introduction of exotic plants (for landscaping or human use) at the site would continue. In addition, there would continue to be impacts to vegetation as a result of ongoing non- native plant removal (primarily by hand-pulling), and vegetation clearing or mowing for fire protection as well as clearing of vegetation adjacent to foundations and/or overhanging buildings during repair or rehabilitation of historic structures and/or additional archeological investigation and site testing. Ongoing effects would continue to be negligible to minor, ranging to locally moderate.

Impacts of Alternative 2 (including Actions Common to All)
In addition to the impacts noted above under Alternative 1, under this and other action alternatives, historic, native and historic non- native vegetation would be managed to minimize encroachment on and to avoid damage to historic structures. In addition, the park would implement systematic inventory and removal of non- native invasive plants. Because this Alternative emphasizes information gathering for cultural resources, there would be few (negligible) impacts to vegetation associated with it. The continued inventory and removal of non- native invasive species would have a long- term negligible to minor beneficial effect.

Impacts of Alternative 3
In addition to ongoing impacts to vegetation noted in Alternative 1 and the more intensive management of historic and native vegetation noted in Alternative 2, this alternative would promote the development of a vegetation management plan that would describe additional non-native vegetation removal and restoration of historic vegetation, particularly the cottonwood, cypress and pine trees noted in historic photographs of the Ranch, a negligible to minor beneficial effect. The vegetation management plan would also address the long- term procurement and disposition of native plant materials needed to maintain the ranch, such as Joshua Trees for the unique corral fencing, with impacts that would range from negligible to minor.

In addition to vegetation that could be restored based on historic photographs or that restored in denuded areas not managed as part of the cultural landscape, there would be a systematic plan to restore a portion of the historic orchard, including obtaining genetically identical stock and creating back- up storage of genetic material in cooperation with a university or other historic plant seed bank organization, a minor long- term beneficial effect. The plan would also address what portion, if any, of the kitchen garden could be restored and would identify the responsibilities for maintaining garden, orchard and landscaping vegetation over time, a long-term minor beneficial effect. The restoration of some areas to native vegetation would result in a long- term minor to moderate beneficial effect by increasing the presence of native species and reducing areas that might continue to be invaded by non- native species. Similarly, the restoration of historic non- native vegetation in the orchard and possibly gardens or representative agricultural sites would increase the array of managed sites and reduce the likelihood of colonization by non- native invasive species, a long- term negligible beneficial effect.

As noted in the *Soils* section above, use of park soils or imported soils for demonstration materials for the adobe hopper or possible rehabilitation of the barn would be done in conformance with park policies on the importation/use of clean fill materials, to prevent the spread of non- native invasive species. If necessary, monitoring as well as specific treatment of these materials, during storage and/or before and after importation would occur to avoid the spread of non- native species.

To adhere to historic preservation analysis and mandates, historic, one individual nonnative invasive species, if determined to be an important component of the historic landscape, the giant reed near the house, would be retained if spread outside the historic landscape could reliably be

controlled. Retention of this non- native invasive managed species would result in a long- term negligible to moderate effect, depending on the success of controlling spread.

Impacts of Alternative 4
Actions, and therefore impacts associated with this Alternative would be the same as Alternative 2. In addition, however, there would be impacts from the removal of vegetation related to the creation of trails to link Keys related sites within the park to others located outside the park and from the 1,200 square foot maintenance/caretaker residence and maintenance storage facility. Because these trails would primarily following existing trails, impacts from new trail construction would be minimized, but could range from negligible to moderate, depending on the segment. Because the focus of this alternative is outwardly directed, there would be an increased use of wayside and other exhibits to illustrate the Ranch during the historic period, as opposed to the restoration of the historic vegetation associated with that period as in Alternative 3, a long- term minor adverse effect.

Impacts of Alternative 5
Impacts associated with this Alternative would be the same as Alternative 3 above, plus there would be negligible to moderate impacts from the removal of vegetation and site grading associated with the reutilization of the historic road and construction of a new visitor contact facility, along with relocation of the caretaker trailer site, visitor parking and vault toilets. Approximately 2,500 square feet of vegetation would be removed for the new parking/staging area and approximately 2,000 square feet for the new caretaker residence and 1,600 square feet plus parking (an estimated 2,000 square feet) for the new visitor contact facility. A variety of plants could be removed (see Appendix 6). Some would be salvaged and reused in area landscaping or elsewhere in the park. To minimize the introduction and spread of non- native species and to facilitate native revegetation, during construction areas proposed for landscaping would have the topsoil pulled back and wind- rowed no higher than three feet (thereby allowing for retention of soil microorganisms) and then placed back on site following construction. Any fill materials would be imported from clean sources and equipment and transport vehicles used would be cleaned prior to use in the park.

Summary: The impacts of Alternatives 1- 5 would be short- and long- term and would range from negligible to moderate. There would be no new impacts under Alternative 1. All action alternatives would result in increased fire protection for the site and protection of remaining historic native and historic non- native vegetation. Historic non- native vegetation (garden, orchard and representative crops) could be restored in some alternatives (3, 5). Long- term impacts to vegetation would result from the construction of new facilities (Alternatives 3- 5) and from the restoration of vegetation. These impacts would range from negligible to moderate and would also include beneficial effects. Restoration of vegetation would have minimal effects on the ranch site, which despite years of inactive management retains evidence of its former widespread disturbance. There would be no impairment of vegetation or values from the implementation of any of the alternatives described in this Environmental Assessment.

Cumulative Impacts: Beginning with its use by the McHaney brothers for grazing, over time there have been a series of modifications to vegetation in the vicinity of the Keys Ranch site. Willis Keys, son of homesteader and rancher Bill Keys told of very large juniper trees as well as many more Joshua trees located on the hillsides surrounding the ranch. Where the reservoirs now lie were likely natural wetland tanks that held water for longer periods than did the surrounding lands, and thus likely had some wetland associated vegetation and were important then as well to humans and wildlife. With the creation of the reservoirs, wetland dependent vegetation has moved to the outer perimeters but remains at the several natural springs in the area. While effects of the development of the Keys Ranch can be seen, most notably in the change in vegetation in areas previously disturbed by farming and ranching, the native vegetation has

begun to invade again and if left will continue to do so. Outside of a few developed areas, the park remains wholly natural, and the impacts of the proposed actions described in this Environmental Assessment – even those which would restore a small degree of the previous development – would have (in comparison to that portion of the park and in comparison to the previous development at the Ranch) minimal (negligible to minor) impacts.

Wildlife

Impacts of Alternative 1

Under this Alternative, maintaining some water capacity in the three dams located at Keys Ranch, as well as the ones at Cow Camp and Barker Dam, which are listed as part of the Keys Ranch Historic District on the National Register of Historic Places, would be done, recognizing that the ability to retain water is dependent both on the seasonality of the resource (during dry years, there is no water) and on safety (water may have to be drawn down to a maximum determined safe level given the poor condition of the dams as it was for the Middle Keys Dam in spring 2005).

Although the primary reason for retaining the dams is because of their historic significance and listing on the National Register, there is also interest in maintaining them because of their importance to a resident bighorn sheep herd, considered one of the healthiest herds in the California desert by state wildlife biologists (DePrey, pers. comm. 2005). Ongoing monitoring of this population and of the effect of public use on it continues to occur.

In addition, other species of both plants and animals have likely become dependent on the reservoirs. They are popular during wet years for waterfowl and birds migrating along the Pacific flyway. Retaining the dams as a water source would continue to have a moderate beneficial effect on the sensitive desert bighorn sheep and a negligible to moderate beneficial effect on other wildlife in the vicinity of Keys Ranch or on those that may travel through the area.

According to the following excerpt from the Joshua Tree National Park General Management Plan, artificial water sources such as the Keys associated reservoirs (three at Keys Ranch, one each at Cow Camp and Barker Dam) may be retained for wildlife if they meet the following conditions:

- if the source is documented in the resource management plan as necessary to maintain or increase a federally- listed threatened or endangered species or could help to prevent a species of concern such as the desert bighorn sheep from declining below a stable population;
- if the water source simulates a natural features, such as a spring or a seep
- or if the water source would have been present but for a natural process that has been altered or destroyed by human activities, including mining, water pumping, road construction or fencing, etc.

The GMP also directs the park to evaluate each source to determine if the artificial water source is replacing a natural source that has been disturbed or altered by human activities inside or outside the park.

> ***Habitat Manipulation****: National Park Service (NPS- 77) policies on animal management direct that "natural processes would be relied upon to control populations of native species to the greatest extent possible." Artificial water sources are a form of habitat manipulation. In desert ecosystems, water is a crucial limiting factor to populations. As a general rule, habitat manipulation for management of native animals is permitted if the species are federally listed as threatened or endangered species, which the desert bighorn sheep is not. Habitat manipulation is also allowed to restore disturbed or altered habitat.*

The new proposed action recommends that each functioning, artificial water source in the park be examined to determine if it supports bighorn sheep and if bighorn populations have become dependent upon it. The examination would also determine if the artificial water source were replacing a natural source within the park that has been disturbed or altered by human activities inside or outside the park.

The National Park Service could allow the continued existence of currently functioning artificial water sources if such a source is documented in the resource management plan as necessary to maintain or increase a Federally- listed threatened or endangered species or could help to prevent a species of concern, such as the desert bighorn sheep, from declining below a stable population. The National Park Service could also allow such water sources if they simulate a natural feature, such as a spring or a seep, or a natural process that has been altered or destroyed by human activities, including mining, water pumping, road construction, or fencing, etc.; otherwise, the source could be removed.

In addition to the effects of maintaining the dams for their historic significance and as a water source for wildlife, other actions associated with Alternative 1 would include ongoing maintenance and repair of historic and other structures at the site and ongoing interpretive tours, which would continue to result in intermittent, long- term negligible to minor adverse effects on wildlife as a result of noise and disturbance associated with the work/tours. During most of the day, most of the year, however, there would continue to be no or negligible disturbance of wildlife.

Impacts of Alternative 2 (including Actions Common to All)
Impacts from this Alternative would be similar to those in Alternative 1, however, the park would conduct specific analysis, in cooperation with Bureau of Reclamation and other dam safety experts to determine an appropriate rehabilitation treatment for the dams (based on existing BOR recommendations) that would result in retention of their eligibility for the National Register and in their continued ability to retain water for desert bighorn sheep/other wildlife if determined appropriate. Retention of the facilities in some form would result in a long- term minor to moderate beneficial effect on desert bighorn sheep and other wildlife that have likely become dependent on the water sources.

Impacts of Alternative 3
In addition to the impacts listed above for Alternatives 1 and 2, this alternative would result in the restoration of native vegetation in areas previously disturbed by ranching and other activities in the vicinity of Keys Ranch and would also result in restoration of native and historic non- native vegetation at the Ranch, both would result in long- term negligible to minor beneficial effects on native wildlife, who would benefit by the re- creation of native habitat and/or perching habitat. The additional use of water for orchard and garden maintenance could have a (rather unlikely) negligible long- term adverse effect, by taking up additional water that would otherwise be used by wildlife or infiltrate as groundwater. Most likely this effect would only occur during drought years and/or would not be noticeable. It is likely that this Alternative would also result in increased visitation to the Keys Ranch, and although that visitation would likely continue to be primarily seasonal and intermittent in nature, it would have a negligible adverse effect on by causing an incremental increase in the noise and disturbance associated with the presence of people and their activities at the ranch.

Impacts of Alternative 4
In addition to impacts described above for Alternatives 1- 2, this Alternative would result in negligible long- term impacts on vegetation associated with construction of the caretaker residence and maintenance facility, and new trail construction, where small portions of native

wildlife habitat would be removed to link the Keys Ranch with other Keys sites in the park and in nearby towns.

Impacts of Alternative 5
In addition to impacts described above under Alternatives 1, 2, and 3, this Alternative would result in impacts to wildlife habitat from the construction of a small visitor contact facility, from the reuse of the historic road, and from the relocation of the caretaker's trailer site, visitor parking area and vault toilets. As noted above under Vegetation, previously disturbed area (primarily from farming) at Keys Ranch would likely be affected by these activities, a minor to moderate long- term adverse effect. Construction of these improvements would also result in short- term minor to moderate disturbance of wildlife, primarily during daylight hours at the Ranch. The creation of impermeable surface areas associated with the development would remove a small degree of underground burrowing habitat, which would continue to be available in adjacent areas in abundance.

Conclusion: While there would be no new impacts as a result of Alternative 1 and few as a result of Alternative 2, Alternatives 3- 5 propose either replacement construction and/or new construction and would contribute a small degree of (negligible to minor) localized short- and long- term adverse impacts (primarily noise and disturbance and the removal of small areas of intact or previously disturbed wildlife habitat). Retaining water in the dams for wildlife would continue to result in long- term minor to moderate (during dry years) beneficial impacts. Restoration of native habitat would make up for some of the proposed construction (particularly in Alternative 5) where new construction affects areas with moderate previous disturbance (grazing and farming). There would be no impairment of wildlife or wildlife values as a result of the implementation of the alternatives in this Environmental Assessment.

Cumulative Impacts: Despite the development of the Keys Ranch area and the development of other modern and historic mining facilities throughout the park, the park continues to appear primarily as a natural landscape. As a result, there have been few impacts to native wildlife. Visitor use, however, has resulted in increased noise and activity concentrated in a few areas of the park and occasional habituation of wildlife to handouts or disturbance. Over most of the park, however, these impacts are not noticeable (negligible to minor) and opportunities to see wildlife remain similar to when the park was established (most evident at night and during the cooler hours of the day).

Rare, Threatened and Endangered Species

Impacts of Alternative 1-5 (including Actions Common to All)
There would be no additional impacts to rare, threatened or endangered wildlife or plants as a result of the actions proposed in Alternative 1. Because, however, ongoing maintenance and visitor use (guided tours) would continue to occur at the Ranch, ongoing monitoring of sensitive species would continue to occur, including monitoring of the park's population of desert bighorn sheep, rare plants located within the administrative closure and during activities that could affect desert tortoises.

Under Alternatives 2- 5 there would be an increased focus on rehabilitation of the structures and areas associated with the Keys Ranch, including restoration of disturbed areas and historic vegetation patterns.

Impacts on Desert Tortoise
To avoid impacts to desert tortoises during maintenance operations, guided tours and other events at the Ranch, tours would continue to stay at least 325 feet (100 meters) from tortoises

when they are observed in the area, while maintenance/rehabilitation activities would continue to be focused during tortoise estivation in summer (June – August) and during tortoise hibernation in winter (November – February). When maintenance or rehabilitation activities occurred during active periods (other times of the year), onsite surveying prior to and during these activities, if needed, would occur to ensure that they would have minimal or no effects on desert tortoises. If tortoises were found and the work could not be modified or implementation period changed to avoid tortoises and their habitat, the USFWS would be consulted prior to implementation of the proposed actions.

New construction (trail connections in Alternative 4) and new visitor contact facility and relocation of other visitor facilities such as the vault toilets, visitor use parking and caretaker's trailer site (in Alternative 5) would require specific surveys for desert tortoises. Impacts to tortoise habitat would require a 1:1 replacement of habitat elsewhere onsite (preferably) or within the park. Under Alternative 5, habitat restoration would occur within the Keys Ranch area, as the historic landscape that originally comprised these developed areas was replaced (area contours and vegetation restored).

Because surveys to USFWS protocol have been conducted for desert tortoises at Keys Ranch and in the vicinity; because tortoises are not known to be actively using the area (nesting/burrowing) and instead appear to be just passing through it; and because the above measures would be used to avoid impacts to desert tortoises, the alternatives proposed in Alternative 1 would be not likely to adversely affect desert tortoises.

Impacts on Desert Bighorn Sheep
As noted above (see *Wildlife*), there would be no additional impacts to desert bighorn sheep from the actions associated with the Alternatives described in this Environmental Assessment.

Impacts on Rare Plants
No Coachella Valley milkvetch has been found in the vicinity of the Keys Ranch. Because no work is proposed outside the primary developed area of the Keys Ranch, other rare plants known from the Keys Ranch vicinity would be specifically avoided by the proposed actions, including the trail connections proposed in Alternative 4 and the new and replacement construction noted in Alternative 5. If the administrative closure area was modified under Alternatives 3- 5, it would be retained in the vicinity of known concentrations of rare plants.

Impacts on Other Rare Species
Other species considered federally or state sensitive would not be affected by the proposed actions under the Alternatives in this Environmental Assessment because 1) they do not occur in the vicinity of the Keys Ranch, 2) they do not reside (just pass through) the Keys Ranch vicinity, or 3) proposed actions would not affect them because their sensitive activity periods do not take place in the vicinity of the Keys Ranch or those activities (nesting, breeding, roosting) would not be modified by proposed actions.

Conclusion: Proposed actions under the Alternatives in this Environmental Assessment would have no effect on the Coachella Valley milkvetch, the Little San Bernardino Mountains gilia or the Flat- tailed Horned Lizard because these species either do not occur in the vicinity of the Keys Ranch or because proposed actions would specifically avoid them. Other sensitive species would also be avoided by proposed actions. Because the Desert Tortoise does occur at the Keys Ranch and vicinity, but because specific actions would be taken to avoid impacts to them, proposed actions may affect, but would be not likely to adversely affect the Desert Tortoise. There would be no impairment of rare plants or wildlife or the values associated with them.

Cumulative Impacts: Species considered rare, threatened or endangered in Joshua Tree National Park have primarily become that way through development and alteration of habitat outside the park. N o known species have become listed or proposed as a result of actions wholly within the park. Park managers are tasked with treating listed, proposed and rare species as if they were all listed and park actions are routinely evaluated for their potential effects on rare species. As a result, there have been no recent cumulative impacts to rare, threatened or endangered species, however, consultation with the USFWS has recently been undergone for proposed actions associated with the park's Fire Management Plan and for road rehabilitation projects.

Archeology

Impacts of Alternative 1

There would be no additional impacts to archeological resources as a result of the implementation of this alternative. Archeological investigation would continue to occur, in compliance with archeological resources protection mandates, in association with specific projects as opportunities arose.

Impacts of Alternative 2 (including Actions Common to All)

Under all action alternatives, there would be additional efforts to inventory and monitor historic and prehistoric archeological resources at Keys Ranch and associated sites; to document the results of site testing; and to stabilize known archeological sites, resulting in the potential for long- term negligible to minor adverse effects and long- term beneficial effects.

Although no specific plans for construction are called for by this Alternative, as proposals for structural rehabilitation were developed, archeological testing in the vicinity of affected structures would occur.

Under all alternatives, if additional prehistoric or historic archeological resources are found during any portion of the proposed actions, work in the associated area would cease until evaluated by the park archeologist or designated representative and archeological resources would be recorded in accordance with current professional standards and through appropriate consultation with the State Historic Preservation Office and affected Native American Tribes. If necessary or possible, relocation of the work to a non- sensitive area would occur to enable more site testing and documentation. Long- term actions could include reinitiating the project in the same area (upon effective data collection) or relocating the action (if possible). In all cases, there would be an emphasis on taking actions that would avoid further disturbance to the site.

Impacts of Alternative 3

In addition to the actions and impacts described under Alternative 2, there would be an increased effort to investigate archeological resources at other areas associated with Keys Ranch to increase the connections in telling the historic and prehistoric human stories linking the development of the Ranch, another long- term beneficial effect.

Impacts of Alternative 4

Proposed actions and impacts would be similar to Alternative 3 however, additional opportunities to investigate archeological resources would be sought with local universities and/or professional organizations. In addition, the construction of trail connections linking Keys Ranch associated sites would result in increased opportunities to adversely affect previously unidentified archeological resources. As specific alignments were developed, these areas would be surveyed for the presence of archeological resources and the strategy identified above in Alternative 2 followed should archeological resources be found.

Impacts of Alternative 5
Proposed actions and impacts would be similar to Alternative 3, however under this Alternative, the construction of new facilities and the relocation of existing facilities would result in increased opportunities to adversely affect previously unidentified archeological resources. Because archeological resources have been detected in surveys throughout the Keys Ranch area, additional site testing would occur prior to the construction or relocation of facilities and known existing areas would be avoided. As noted above under Impacts of Alternative 2, a strategy to investigate and to avoid further disturbance of archeological resources would be followed in consultation with the park archeologist and the State Historic Preservation Office and associated Native American Tribes as appropriate.

Conclusion: Impacts to archeological resources would be avoided to the degree possible by conducting additional archeological site testing prior to disturbance. Most actions called for by the Alternatives would occur in areas previously affected by development of the Keys Ranch. In the event that previously unknown archeological resources are found at proposed development sites, proposed actions would be relocated, if possible, to nonsensitive areas. Proposed actions would have no adverse effect on archeological resources and would not result in impairment of archeological resources or the values associated with them.

Cumulative Impacts: Because actions would be taken to avoid specific impacts to archeological sites, there would likely be no additional impacts to archeological resources or values and therefore, no contribution to cumulative impacts on park archeological resources. Overall, park development projects have had long- term cumulative adverse impacts ranging from negligible to minor (when archeological resources have been uncovered during surveys for these projects and from the construction of facilities prior to the advent of archeological resources protection laws), coupled with long- term negligible to moderate beneficial impacts from additional opportunities to study archeological resources. Proposed actions under this Environmental Assessment have been designed to continue to contribute to an understanding of prehistoric and historic occupation of the Keys Ranch area and of the park as a whole.

Ethnography

Impacts of Alternative 1
There would be no additional impacts to ethnographic resources as a result of the implementation of this alternative.

Impacts of Alternative 2-5 (including Actions Common to All)
There would be no effect on or impairment of any known ethnographic resources as a result of the alternatives described herein. None propose use where use is not already occurring, nor would any change current Native American use of existing areas. Regardless, it is clear from the number of archeological sites found in the vicinity of Keys Ranch that the area has long been important to Native Americans. As a result, ongoing consultation with affected tribes will continue to occur as specific implementation plans are developed.

Conclusion: Although areas near the Keys Ranch have been used for the repatriation of human remains found in the park (in conformance with the Native American Graves Repatriation Act), ethnographic resources would not be affected by the proposed actions. There would be no impairment of ethnographic resources.

Cumulative Impacts: No known cumulative impacts to ethnographic resources have occurred as a result of past actions or would occur as a result of proposed actions associated with the implementation of any of the Alternatives in this Environmental Assessment.

Museum Collections

Impacts of Alternative 1

Because the Museum Management Plan (NPS 2005) was recently approved, the park would begin to implement its recommendations under this Alternative. Recommendations that would be implemented include:

- Secure funding for the completion of cultural landscape report to follow the recently completed Level II Cultural Landscape Inventory (NPS 2004).
- Consider the preparation of Historic Structures Reports for the Keys Ranch buildings.
- Systematically inventory, record, identify and assess the artifact assemblages at the Desert Queen Ranch.
- Analyze the Keys Ranch collections to determine if items should be de- accessioned and repatriated to the Ranch on a case- by- case basis.
- Maintain a limited collection of personal objects from the Keys family that could be used for exhibit at locations away from the ranch site.
- Process the Keys archives, create a finding aid to this material, and make this information electronically available.
- Apply cyclic maintenance funding to effect preservation treatments for the historic buildings, structures, machinery and other items from the Keys Ranch.
- Prepare Historic Furnishings Reports for applicable structures.

Implementation of these recommendations would result in a long- term beneficial effect on Keys Ranch and its museum collections. Depending on the number of and reasons for de-accessioning of some of the Keys Ranch collections, there could be negligible to minor adverse effects on those collections. Items left at the Ranch in the absence of the implementation of additional preservation measures would likely continue to deteriorate over time, while higher priority items are treated.

Beyond recommendations stemming from the Museum Management Plan, management of the Keys Ranch collections would remain the same as it has been in previous years, with annual conditions surveys of accessioned museum objects and ongoing efforts to preserve the both the existing collections, including oral histories associated with the Ranch; to display them as appropriate or requested; and to add materials of high value (significance) to them as made available through donation or purchase opportunities.

Impacts of Alternative 2 (including Actions Common to All)

In addition to the long- term negligible to minor adverse and long- term minor to moderate beneficial impacts of implementing the recommendations of the Museum Management Plan, the park would begin to seek out and take advantage of additional opportunities to exhibit the Keys Ranch collections to enhance appreciation and preservation efforts directed at the Ranch through establishment of relationships with the local community. In addition, oral histories would be maintained and their use expanded by creating transcripts and backup tapes of their contents and by opportunistically seeking to supplement the oral histories in the collection by additional interviews with Keys family members who recalled Ranch experiences as well as people who had relationships with the Keys family. These actions would result in additional long- term negligible to minor benefits associated with managing the Keys Ranch collection.

Impacts of Alternative 3

Impacts of this Alternative would be the same as Alternative 2 with respect to continued preservation of existing museum collections, analysis of preservation treatments for collections, display of the collections, and the implementation of the Museum Management Plan recommendations. In addition, under Alternative 3, the park staff would work with people in local communities to obtain information and objects associated with the Keys Ranch for collaborative use/display. Park staff would also work to develop exhibit plans for the GMP proposed new visitor center focusing on Native Americans and the Keys Ranch. In this Alternative, as opposed to Alternative 2, the park would systematically, rather than opportunistically seek to identify and conduct oral histories with Keys family members and other knowledgeable people. Finally, the park would explore opportunities to allow visitors to enter structures (up to roped off areas), which would result in an additional need to repopulate some portions of buildings with historic furnishings. To do so, use of only authentic objects (from the Keys Ranch) or representative objects (like things hat were at the Keys Ranch) would occur. Taken together, these actions would improve the management of and possibly add to display of the Keys Ranch Collections, a minor to moderate long- term beneficial impact.

Impacts of Alternative 4
Impacts of Alternative 4 would be the same as Alternative 3, except that the park would place a greater emphasis on working with local community museums, university museums, special and traveling exhibits to display information and artifacts from the Keys Ranch instead of repopulating onsite structures. The establishment of these outside relationships would be used to stimulate additional preservation interest in the Keys Ranch core area, as well as in making the linkages among Keys- related sites in the vicinity of the park, a long- term beneficial impact as the focus of this Alternative.

Impacts of Alternative 5
This Alternative would be the same as Alternative 4 with respect to museum collections, but would systematically build on the park's collections by conducting comprehensive preservation treatments for objects within the Keys Ranch Collection and other objects that could be obtained. There would be a focus on accessioning additional objects associated with the Keys Ranch that were unique or representative and that could not be preserved on site. Opportunities for display of these objects could be provided for in the reconstructed adobe barn, in the new visitor contact station (rotating exhibits) and in the park's proposed new gateway community visitor center focusing on cultural history associated with Native Americans and the Keys Ranch as well as in the rehabilitated Ranch House (and other potential structures allowing visitor walk- throughs). As in Alternative 3, only authentic or representative pieces would be used.

Conclusion: Alternatives 1- 5 would have increasingly negligible to moderate beneficial impacts on the preservation of museum collections associated with Keys Ranch. In addition, they would add valuable information to, increase preservation of (1- 5) and add appropriate materials to (2- 5) the Keys Ranch Collections. There would be no impairment of museum collections under any of the Alternatives described in this Environmental Assessment.

Cumulative Impacts: Over time, Keys Ranch museum collections have suffered because of inadequate analysis of the importance of materials from the site. While some unique items have been preserved in the collection for many years, other unique materials have remained at the Ranch. Materials remaining at the Ranch do not now and could never receive adequate care and preservation treatments because they are unsecured and remain exposed to weather, vandalism and the possibility of losing context by being moved. Over time, potential and accessioned collections objects have lost integrity and stability. Alternatives 1- 5 would not continue to contribute to these moderate adverse effects. Instead, all call for systematic inventory and then analysis of the items in the collection and the need for their retention there as well as an increased effort to determine their use and importance by establishing relationships with gateway

communities, encouraging their display, and by fostering information about them through the gathering of additional oral histories.

Historic Structures / Historic District

Impacts of Alternative 1

This alternative would continue to emphasize high priority repair and maintenance actions as needed at Keys Ranch. Depending on funding and staffing and other park priorities, structures would continue to be stabilized. Inventory of Keys Ranch resources would continue to occur opportunistically, rather than systematically according to a prioritized schedule. Because there would continue to be incidental and non- systematic monitoring of Keys Ranch resources, building conditions could deteriorate until a catastrophic event, such as a major storm or collapse necessitated additional monitoring or repair. This continuation of current conditions could result in the additional deterioration of Keys Ranch resources similar to that identified in the Museum Management Plan showing conditions in the 1970s compared to conditions in the 1990s (NPS 2004), a long- term minor to moderate adverse effect.

Impacts of Alternative 2-5

Under all action alternatives (2- 5), the park would develop a systematic prioritized preservation strategy for maintaining buildings and structures, and non- museum collection objects at Keys Ranch and associated areas. Beginning with this survey, the park would also conduct systematic conditions surveys for buildings and structures, as well as the historic landscape, museum and non- museum objects associated with Keys Ranch. The development of the prioritized strategy and implementation of regular conditions monitoring surveys would result in a long- term moderate beneficial effect on Keys Ranch historic resources.

In addition, analysis of and implementation of non- native invasive plant removal and vegetation maintenance important to preserve historic buildings and structures, as well as the historic landscape would be undertaken, a minor long- term beneficial effect.

In Alternatives 3- 5, there would also be an emphasis on restoration to real or apparent working condition (if possible) of the well and irrigation system, the adobe hopper, the arrastra and the stamp mills. While the mills would be used for demonstrations, they would not be re- used for production. The irrigation system and well, however would ideally be restored to working condition to provide water for watering the orchard (2- 5); restoring the orchard (3, 5); restoring historic native and non- native vegetation (3- 5); restoring disturbed areas not being managed as part of the Historic District (3, 5); and for other maintenance and restoration activities, including repairs to the dams (2- 5). Depending on the restoration activity and alternative there would be a range of long- term negligible to moderate benefits that would stem from the rehabilitation of the irrigation system. Impacts to the historic structures themselves (arrastra, mills, orchard, historic landscape, etc. would include negligible to minor adverse effects from the replacement in kind of parts and minor to moderate beneficial effects from the ability to continue to preserve them.

Re- use of the adobe hopper to manufacture adobe would be undertaken only if use would not affect the ability to preserve the structure. Otherwise a replica would be used for both demonstration (2 - 3, 5) and manufacturing purposes (3, 5).

Impacts of Alternative 2 (including Actions Common to All)

Upon completion of the priority setting preservation strategy, the stabilization of structures on or eligible for the National Register would receive treatments first. Special funding opportunities would be sought to regularly maintain and rehabilitate Ranch resources based on their importance and preservation recommendations.

Similar to Alternative 1, as opportunities arose, the park would continue to assess historic resources and to determine effective preservation strategies for them. Incidental/non- systematic monitoring of Keys Ranch resources, as described in Alternative 1 would continue cyclically upon receipt of special funding and as needed (for example, following major storms) and would continue to result in a long- term minor to moderate adverse effect. In addition, there would be continued facilitation of research about the resources as opportunities arose, a negligible beneficial effect. The primary means for visitors to explore Keys Ranch resources would continue to be maintaining the outside- in views of Keys Ranch interiors and the use of photographs to show former interiors and existing conditions, as well as other missing features.

Impacts of Alternative 3

Under Alternative 3, instead of just stabilizing historic buildings and structures, systematic repair and/or rehabilitation would also occur, resulting in a long- term minor to moderate beneficial effect. To the degree possible, this Alternative would also focus on restoring the outward appearance of Ranch House and would investigate the feasibility and implement replacement of the missing adobe barn with a structure of compatible form and character that would protect key pieces of working/restored equipment from the elements and which would also support other ranch maintenance and storage needs. Restoration of the Ranch House would have a long- term moderate beneficial effect and negligible to minor adverse effects on that structure and a minor beneficial effect on the Historic District. Other structures within the Historic District would continue to offer outside- in views. As opportunities arose, restoration of missing features (with sufficient documentation) could occur. If possible, opportunities to stabilize and open portions of other buildings (such as the ability to step inside roped off entrances) would be undertaken pending time, funding and continued public interest in Ranch resources.

Instead of incidental, non- systematic monitoring of Keys Ranch buildings and structures, the park would begin to conduct regular monitoring conditions surveys, resulting in more frequent analysis of Keys Ranch, a long- term negligible to moderate beneficial effect. In addition, the development of a research prospectus would foster additional restoration opportunities for Keys Ranch historic structures and historic and non- historic collections.

While enough documentation is available (Historic American Buildings Survey /Historic American Engineering Report) to reconstruct the adobe barn, which existed until the late 1970s, any rehabilitation of a compatible contemporary structure would be undertaken with great care and attention to both historic documentation and method of construction and would require additional consultation with the State Historic Preservation Office and with NPS cultural resources specialists. Because reconstruction of historic structures would require approval from the Director of the National Park Service, due to the high degree of uncertainty involved in some reconstructions without adequate historic documentation, construction of a compatible structure of similar form and size would likely be undertaken instead. Construction of a compatible structure within the Historic District to serve as either storage or a visitor contact facility would result in minor to moderate beneficial and adverse effects by placing a new structure where one once existed.

Alternatives 3- 5 would also include the possible addition of wayside exhibits to interpret areas of the ranch for incidental, self- guided and tour visitors.

Impacts of Alternative 4

As in Alternative 3, systematic building stabilization, repair and rehabilitation would occur and would have similar impacts. In addition systematic monitoring conditions surveys and opportunities to restore some interior features of the structures would be pursued. In this Alternative, however, once the Keys Ranch features were restored, there would be a greater

emphasis on developing linkages with other sites in the park and surrounding area that were used by Bill Keys during his lifetime. As a result, trail connections would be emphasized that linked the Keys Ranch to Keys View (a road originally constructed by Bill Keys) and the town of Joshua Tree. The possibility of staging tours from the Barker Dam area would also be explored, as would offering tours which connected the Keys Ranch Joshua Tree National Park Bill Keys story to the Bill Keys story in other park areas as well as outside the park.

In addition, there would likely be a security/surveillance system installed in this Alternative that would assist in protecting the site during the off- season and at night. The system would be designed and installed to be inconspicuous. Needed facilities (including utilities as appropriate) would be concealed within one of the historic structures or a compatible non- historic structure on site.

Impacts of Alternative 5

In addition to impacts of Alternative 3 described above, the following proposed actions under Alternative 5 would have the ability to affect historic structures at Keys Ranch:

- Make Ranch House accessible, code compliant, and structurally sound to allow interior visits by public.
- Potentially restore other buildings to accommodate tours.
- Restore and reutilize the historic entrance road.
- Construct a small visitor contact facility.
- Relocate the caretaker's trailer site/construct new residence (approximately 1,200 square feet).
- Relocate the visitor parking area and vault toilets.

There would be a series of potentially adverse and beneficial impacts of the rehabilitation needed to make the Ranch House accessible, code compliant and structurally sound. Rehabilitation would include adding a foundation to the structure, securing the building to it and replacing building interior and exterior wood members and finishes as needed to reinforce its design and to add utilities if and where needed. While adding accessibility to the ground floor would be achievable without adversely affecting the structure, the major modifications that would be needed to make the second floor accessible would adversely affect the structure. As a result, under this Alternative, accessibility would be added and potential visitor traffic through would occur only via the ground floor. Ultimately, proposed actions would be designed so as to facilitate the required SHPO consultation but would have no adverse effect on the structure or its eligibility for the National Register.

The potential rehabilitation of other structures would be undertaken only as permitted by funding and evaluation of continued use for interpretation. Most would continue to be available to visitors by peering in windows or stepping into the doorways, but would not become the focus of interior tours.

Rehabilitation and use of the historic entrance road to accommodate visitors would result in a long- term beneficial impact by restoring the historic entrance to the site (visitors now enter on a non- historic road, passing through a series of non- historic facilities, including the road itself, the parking lot and vault toilets). The additional relocation of the visitor parking area and the vault toilets to outside of the Historic District would result in long- term minor to moderate adverse effects to other resources, depending on where the structures were relocated to, but a long- term moderate beneficial effect on the Historic District and its contributing landscape. Visitors would depart with a much better sense of the circulation patterns and arrangement of buildings and structures at the site.

Constructing a small visitor contact facility would add to the two visitor centers and visitor contact facility currently managed by the park at some distance from the Keys Ranch. The new facility could be constructed to contain a small number of exhibits directly related to Keys and other nearby park resources and to offer a variety of onsite in- depth interpretive experiences that would enhance the visitor experience at Keys Ranch. To mitigate potential effects on the Historic District, it would also be constructed outside of the District and, if possible, would also not be visible from viewsheds that look onto/or from Keys Ranch. Construction of this facility, while it would increase the number of park facilities would have long- term beneficial impacts on the Keys Ranch Historic District by its ability to impart information wholly and directly related to Keys in the vicinity of the District, as opposed to the current single exhibit case located in the Twentynine Palms Visitor Center.

Conclusion: Continued preservation maintenance, including the possible restoration and/or rehabilitation of buildings and structures at Keys Ranch would have no adverse effect on their continued eligibility for or listing on the National Register of Historic Places as part of the Keys Ranch Historic District. Actions that would be undertaken to preserve the structures would be in conformance with the Secretary of the Interior's standards and would include replacement- in-kind of existing and missing features (with adequate documentation) and/or replacement with compatible materials that would reduce long- term cyclic maintenance needs. There would be no impairment of historic resources as a result of the implementation of any of the Alternatives described in this Environmental Assessment.

Cumulative Impacts: (*See analysis below under Historic District/Cultural Landscapes*)

Cultural Landscape

Impacts of Alternative 1

Under Alternative 1 minor non- contributing elements (including the outhouse, maintenance shed and water tank) which now have a minor adverse impact on the historic scene would be maintained. Major non- contributing elements (including the visitor parking area and vault toilets, as well as the caretaker's trailer site would all also continued to be maintained. Because these structures would continue to remain in the Historic District, they would continue to result in a moderate adverse effect.

By the same token, contributing elements of the historic scene would also continue to be maintained. To the degree possible, park actions would ensure that the addition of new features or repair of existing features does not contribute to loss of integrity within the Historic District. Continued removal of non- historic and non- native invasive species would result in ongoing negligible beneficial effects. Maintenance of the non- historic plantings along with the historic plantings in the orchard would continue to result in a minor adverse effect on this resource.

Allowing the former plowed and garden areas to revert to native vegetation would continue to have long- term minor (and eventually moderate) effects on the historic scene. Over time, without rehabilitation these elements of the historic scene would gradually disappear.

Impacts of Alternative 2 (including Actions Common to All)

Alternative 2 would restore portions of the Keys Ranch setting by removing or enhancing compatibility of non- contributing elements as they deteriorate or as time and funding permit, a long- term minor beneficial effect in contrast to the continued long- term moderate adverse effect of allowing the incompatible visitor use parking area, vault toilets and caretaker's trailer site within the Historic District to remain. As in Alternative 1, the park would work to ensure that the addition of new features or repair of existing features does not contribute to loss of integrity and

to replace non- historic vegetation with historic and native vegetation where appropriate through the removal of non- native invasive species.

Effects of continuing to maintain the orchard and other areas as in Alternative 1 would continue.

Impacts of Alternative 3
Alternative 3 would result in a series of long- term beneficial effects on the Keys Ranch Historic District through the specified completion of a Cultural Landscape Inventory for mining, and a Cultural Landscape Report for the Keys Ranch core area. Under this Alternative there would be a greater emphasis on removing, disguising or relocating non- contributing elements within the Historic District, however the visitor parking area, the vault toilets and the caretaker's trailer site would remain within the Historic District and would have the same effects as described above in Alternatives 1 and 2. Similarly, the retention of other buildings and structures in the Historic District would have the effects noted above.

With the development of a vegetation management plan as part of the Cultural Landscape Report under this alternative, the park would be better able to sort out priorities and costs associated with restoring various elements of the historic scene, including a portion of the gardens, the orchard and possibly representative agricultural areas, as well as the replacement of well-documented specimen trees near the Ranch House.

Impacts of Alternative 4
Like Alternative 3, this Alternative would result in a series of long- term beneficial effects on the Keys Ranch Historic District through the specified completion of a Cultural Landscape Inventory for mining, and a Cultural Landscape Report for the Keys Ranch core area. In addition to these reports, however, Alternative 4 would also include completion of a CLI for the Wall Street and Desert Queen Mine as well as a CLR for all sites related to the Keys Ranch (not just the core area). Completing the CLI for mining (all sites related to KDQR), would result in additional long- term beneficial effects associated with learning more information and making more recommendations regarding the preservation of the Keys Ranch Historic District and other associated designated and non- designated historic resources.

Other impacts to the Historic District associated with the implementation of Alternative 4 would be the same as noted above for Alternative 3. Over time, this alternative would differ in that it would present a more comprehensive story to park visitors regarding the significance of the Keys Ranch in the context of the story of the park and desert settlement outside of the park.

Impacts of Alternative 5
This alternative would result in all the same beneficial impacts described above for Alternatives 3 and 4, but would have the additional long- term moderate beneficial effect of removing major incompatible elements (the visitor parking area, vault toilets and the caretaker's trailer site) from within the Keys Ranch Historic District. As a result this alternative would have the greatest beneficial impact on restoration of the historic scene associated with the Keys Ranch. These facilities as well as a small, new visitor contact facility would be relocated and/or constructed outside of the Keys Ranch Historic District and, if possible, out of the viewsheds associated with the Keys Ranch and Keys View. Upon relocation of these facilities, the area would be restored to natural conditions and visitors would enter the site along the restored historic road, now used only for administrative access to the site. Together these actions would constitute a moderate long- term beneficial effect by restoring additional integrity to the Historic District.

Conclusion: Alternatives 1- 5 would have a series of negligible to moderate beneficial effects by restoring some landscape features and components, including buildings and structures and vegetation at Keys Ranch. Alternative 5 would increase these moderate beneficial effects by also

removing the currently incompatible, non- historic caretaker's trailer site, visitor parking area and vault toilets from within the Historic District. Because leaving these features in place is not considered an undertaking under Section 106 of the National Historic Preservation Act (the impact of which was considered when they were placed), there would be no adverse effect from any of the proposed Actions under Alternatives 1- 5 as described in this Environmental Assessment on the Keys Ranch Historic District landscape or its continued eligibility for listing on the National Register of Historic Places.

Cumulative Impacts: Over time, as the Keys Ranch was included in Joshua Tree National Park and subsequently evaluated and reevaluated for historical significance and the ability to preserve it, there have been a series of short- and long- term negligible to moderate adverse effects on the historic integrity of the Ranch, which are documented in recent reports, including the Keys Ranch Cultural Landscape Inventory (NPS 2004). Among the effects have been the loss of integrity associated with relocation of structures and materials at the Ranch; the deterioration of historic buildings and other elements of the historic scene; the encroachment of vegetation; the loss of historic vegetation; and the placement of non- historic, incompatible elements, such as the water tanks, visitor parking, vault toilets, and memorial fruit trees. Compared to these short- and long- term adverse impacts, Alternatives 2- 5 would have primarily minor to moderate beneficial impacts and would restore the park's long- term commitment to preserve Keys Ranch Historic District resources.

Interpretation and Visitor Experience

Impacts of Alternative 1

Interpretation

While there would be no expansion of the park's interpretive program, as long as it was funded Alternative 1 would continue to provide a small number of park visitors with an opportunity to experience the Keys Ranch, a long- term negligible to minor beneficial effect. Periodic peak season ranger guided tours of Keys Ranch offered through the existing reservation system would continue as funding permits. Specialized tours would also continue to be conducted by request as funding and staffing permit. Visitors would continue to obtain tickets at the visitor center, meet at Keys Ranch and carpool with the ranger to Keys Ranch.

The curriculum- based education program for 4th and 6th graders would also continue to be conducted pending continued funding. Trips would continue to be reserved in advance and school buses would continue to be met by ranger interpretive staff at the site. As possible, demonstrations of working equipment (such as the washing machine, back cracker, rock drill, water pump, etc.) would continue. If the loss of the interpretive and educational programs resulted from a funding short- fall, there would be a short- to long- term moderate adverse effect on the visitor experience. Maintaining these programs, on the other hand, would continue to result in a short- to long- term minor beneficial impact due to the erratic nature of continued funding and the small number of public visitors who now take advantage of these programs. The effect, however, would also likely range to moderate, given the relatively large number of school children now served (450- 600).

Informational materials about the Keys Ranch would continue to be sold in the main park visitor centers and existing wayside exhibits would be maintained or rehabilitated as needed. The self-guided trail signs referring to Keys Ranch at Barker Dam would also be maintained. Both would continue to offer negligible to minor benefits, depending on the number of visitors taking advantage of them and their usefulness in the overall visitor experience in learning about Keys Ranch.

Visitor Access and Circulation

Both historic and non- historic roads would continue to facilitate visitor use access. Visitors would continue to stage within the Historic District upon following a ranger to carpool to the site. Because visitors would continue to have access to only a limited number of Keys Ranch tours, during the peak season and because conducting these tours would continue to be dependent on an inadequate source of funding, visitors would continue to have to reserve their space/ticket at the main park visitor center and upon carpooling to the site would take advantage of limited parking availability, a long- term minor long- term minor to moderate adverse effect (for those visitors who wanted, but could not obtain tickets for the tour/an opportunity to see the Ranch) coupled with a long- term minor beneficial effect on those visitors who were able to take advantage of Keys Ranch tours.

Impacts of Alternative 2 (including Actions Common to All)

Interpretation

There would be a slight expansion of interpretive opportunities under this Alternative that would allow up to 25 percent of park visitors an opportunity to learn about Keys Ranch. This would be made possible by permanently funding the Keys Ranch interpretive program through regular park program funds. To continue to offer guided tours and to minimize the cost of expanded activities, these could then include an emphasis on producing more written materials about specific aspects of the Keys Ranch operation that could be available for purchase and/or distributed upon request. The park or cooperating association would also work to secure another publisher to make Willis Keys' book available again. Under this Alternative, the park would begin to offer a limited number of specialized tours during peak periods and/or to conduct Keys Ranch special events. For example, an adobe tour could include a demonstration adobe hopper at Keys Ranch and visits to nearby adobe sites, such as Ryan Ranch, while a mining tour could explore the mining activities and success at Keys Ranch and Barker Dam compared to another park mine site.

In addition to the impacts of Alternative 1, together, these activities would have a long- term minor beneficial effect on the visitor experience, providing visitors with both additional opportunities to learn about Keys Ranch and increasing the relevance of and opportunities available to visitors participating in Keys Ranch tours. Over time, as additional visitors learned of the efforts to restore Keys Ranch, more could become involved in site preservation opportunities (including funding and restoration), a long- term negligible to moderate beneficial effect.

Visitor Access and Circulation

As in Alternative 1, park visitors unable to obtain tickets for a tour of Keys Ranch during non-peak periods and other times would likely continue to be frustrated in the opportunities available to visit Keys Ranch. Those who did obtain tickets would continue to have to purchase tickets at the main park visitor center and to carpool with the ranger to the Keys Ranch site. Although the demand for Keys Ranch tours has not been overwhelming, it is likely that as the Ranch was rehabilitated, that the demand for tours would continue to increase over time, and could result in continued frustration of visitors wishing to experience Keys Ranch. Because however, there would be additional opportunities to explore Keys Ranch without actually going to the site (additional interpretive media), this would be a long- term negligible adverse effect, primarily on first- time visitors and visitors from out of the area. Over time, regional visitors would continue to have opportunities both to visit and to learn about Keys Ranch on return visits.

Impacts of Alternative 3

Interpretation

The expansion of interpretive opportunities under this Alternative would allow up to 50 percent of park visitors an opportunity to learn about Keys Ranch. Permanent funding for the Keys Ranch programs, as well as establishing effective partnerships within the local and wider community would enable the park to begin to showcase the unique experience available at Keys Ranch. Using funding gained from community partnerships, there would be an increase in the

frequency, type and timing of tours and other methods of providing visitors with an opportunity to see Keys Ranch would be explored (limited, monitored self- guided tours, site open houses, etc.). Rehabilitation funding would be focused on the Keys Ranch core area, and would effectively restore ranch equipment to working order on a priority basis. As needed, demonstration equipment would also be obtained and modeled for tours (use of actual equipment would be restricted to actions which would not impact its preservation). To facilitate additional visitors learning about Keys Ranch, the park would include a schedule of regular and on- call activities (tours, campfire programs, educational programs, etc.) in the park newspaper. As in Alternative 2, the park would attempt to produce additional brochures, articles and other interpretive media focused on the Keys Ranch.

Visitor Access and Circulation

Upon procurement of funding, the park would work to develop a general orientation film that could be presented regularly at the park visitor center. Additional or rotating exhibits in park and local museum facilities would be encouraged. In addition, under this Alternative, over time, the Ranch House itself could be opened for tours, increasing the sense of preservation and ability to access sites at the Ranch itself. As part of this Alternative, there would also be a study to assess the need for and size of the administrative closure of the Ranch during non- scheduled tours. This assessment could result in no change or minor changes to the administrative closure boundary, based on the need to provide security for the Ranch during off- peak periods (seasonal and time of day closures) as well as the need to protect the sensitive bighorn sheep herd, site archeological and ethnographic resources and rare plants found within the current closure. Impacts to visitor use could range from no or negligible adverse impacts to minor beneficial impacts if some areas were deemed appropriate to reopen to unrestricted or restricted visitor use (during certain times of year/day).

Impacts of Alternative 4

Interpretation/Visitor Access and Circulation

As in Alternative 3, the expansion of interpretive opportunities under this Alternative would also allow up to 50 percent of park visitors an opportunity to learn about Keys Ranch, a long- term moderate beneficial impact. This and other impacts associated with Alternative 4, would be similar to Alternative 3, however, upon the restoration of the immediate Ranch area, there would be additional emphasis on linking the Keys Ranch site to other park and local related sites through interpretive media, partnerships with local community organizations and other means, adding to long- term beneficial effects. In addition, there would be an increased effort to bring the Keys Ranch experience to visitors who could not go on the ranger- guided tours or who could not experience the Keys Ranch through other means. Funding and a site (which could be adjacent to the Barker Dam parking area or at a nearby park visitor center) would be sought to provide a small Keys Ranch orientation kiosk to tell the linked stories of Keys Ranch, Barker Dam and other Keys- related sites. As mentioned elsewhere, trails to link Keys sites would also be developed and would serve as additional conduits for visitors to learn about Keys Ranch. Over time, a thematically linked series of wayside exhibits or brochures would expand the story of William Keys to other park sites. To facilitate additional interest and partnerships in the Keys Ranch, the park would also begin taking the Keys Ranch story and demonstration equipment to community events. Combined, these activities would result in minor to moderate improvements in the visitor experience associated with Keys Ranch.

Impacts of Alternative 5

Interpretation

The expansion of interpretive opportunities under this Alternative would allow most park visitors an opportunity to learn about Keys Ranch.

Because this Alternative would be an expansion of the actions contained in Alternatives 3 and 4, initially it would have similar impacts, however as implementation continued, it would have a greatly expanded interpretive development component which would include the following:

- increased ability for visitors to observe and participate in the use of tools and equipment at the Ranch;
- an increased ability for visitors to experience the Ranch in different ways, for example through self- guided tours, community programs, bus tours and satellite visitor center programs;
- a wide variety of additional specialized interpretive programs, such as orientation tours, expanded curriculum- based educational programs (on and off- site); mining site tours, homestead operations tours, Indian culture and history tours, guided tours of the Ranch House interior;
- increased publications, including newspaper and magazine articles, maps and brochures;
- the development of more in- depth brochures and/or films on Native American, mining and family history;
- the development of a computerized "virtual tour" of the Keys Ranch; etc.

These greatly expanded interpretive and educational opportunities would result in a long- term moderate to major beneficial impact on the visitor experience. Many more visitors would be able to take advantage of learning about Bill Keys and his influence on the park and region. The expanded interpretive program would likely result in expanded interest in the Keys Ranch and linked cultural sites and could foster both the development of an increased volunteer program, as well as increased funding through donations and grant writing for the operations. Because the complexity of managing the program at the park would also greatly increase, there could also be minor to moderate adverse impacts associated with managing this program on park staff (see *Park Operations* section below).

Visitor Access and Circulation

Unlike Alternatives 1- 4, where visitor access and circulation patterns would remain virtually unchanged (with the exception of the expanded trail connections and information kiosk called for in Alternative 4 and the possible opening of the Ranch House interior to visitors in Alternatives 3 and 4, under Alternative 5, there could eventually be major changes in access and circulation. Among these would include the following:

- Removing the parking area at Cow Camp and gating the road near Barker Dam while relocating the current carpool parking area and vault toilets from within the Historic District;
- Restoring the former parking area/vault toilets to historic natural conditions;
- Restoring the historic entrance road and upgrading it to accommodate public transportation via shuttle or restored wagons (if determined feasible);
- Constructing a small new visitor contact facility near the Ranch (outside of the Historic District) to increase the opportunity to tell the Keys Ranch story to more visitors and to stage tours from; and
- Increasing the ability of visitors to enter rehabilitated buildings and structures at the Keys Ranch.

While the above actions would generally result in an enhanced visitor experience, some visitors who favored a reduced experience at the Ranch would find the increased noise and activity associated with increasing access to the Ranch disconcerting. Those who had hoped to quickly participate in learning more about the Keys Ranch could find the extra time needed for the trip to the Ranch to be more time than they were willing or able to spend (although access time including obtaining tour tickets, if needed, would be similar to that now required). Overall, however, visitors would find the Keys Ranch experience to be more like it was when Bill Keys still resided

at the Ranch and they would be able to make the connections to their own and his past experiences of the park. The enhanced services available at Keys Ranch would likely result in additional interest and preservation funding for the site and would ensure its increased symbolism and use as one of the park's premiere cultural resources. Combined, these actions would have minor to major beneficial effects and negligible to minor adverse effects on visitor experience.

Conclusion: Alternative 1 would result in no new impacts as a result of improvements in interpretation or visitor access and circulation. Alternative 2 would result in low- cost minor improvements in interpretation beyond permanent funding of the current program, but few improvements in visitor access and circulation, which would generally be the same as in Alternative 1. Alternatives 3 and 4 would begin to result in moderate improvements in the interpretive program, with a host of new programs, services and the provision of information. Alternative 4 would go a step beyond the proposed improvements in Alternative 3 and result in linking the sites associated with Bill Keys throughout the park and would also increase partnerships and programming in the gateway communities. Alternative 5 would result in improvements to the park's interpretive programming similar to Alternatives 3 and 4, but would have greatly increased modifications to visitor access and circulation that would result in major changes to the visitor experience.

Cumulative Impacts: Management of Keys Ranch by the park has changed over time, increasing its protection and prominence as a park cultural resources site. Management has evolved from little understanding of the significance of the resource, to placement of the resource within the context of its significance within the park and community, including its listing on the National Register of Historic Places. As a result, of this evolution in understanding, different experiences over time have been provided to park visitors, including caretaker management of the site, fostering of routine and special guided tours of the site during the nation's bicentennial, to the present day program of reserved guided tours. During this same time, access to the ranch has been occasional, by invitation only and regular, through peak season ranger guided tours. Under the Alternatives proposed in this Environmental Assessment, there would continue to be gradual (Alternative 2) to moderate (Alternatives 3 and 4) to sweeping changes in interpretation and to a lesser degree (except for Alternative 5) changes in visitor access and circulation. Regardless of which alternative is selected for implementation, the proposed changes would conform to the park and public's vision for management of Keys Ranch and would have beneficial impacts that would systematically transform the management of the Ranch from a little- known site to one of the park's premiere cultural resources attractions, emphasizing the continuum of its history of development, from its use by Native Americans, to its settlement by Bill Keys and his family through its management by the National Park Service, a long- term moderate beneficial impact on interpretation and visitor experience, in contrast to the occasionally adverse impacts conferred by inadequate analysis of the significance of the resource over time.

Wilderness

Impacts of Alternative 1

There would be no new impacts and no impairment of wilderness resources with the implementation of Alternative 1.

Impacts of Alternative 2-5 (including Actions Common to All)

There would be no permanent impacts to wilderness resources in any of the action alternatives. Negligible to minor temporary impacts, primarily associated with rehabilitation of historic structures (Alternatives 2- 5); construction of trail linkages (Alternative 4), and construction or relocation of facilities (Alternative 5) would result in noise and disturbance that could be detected

in nearby wilderness. Although approximately ___ acres of wilderness are currently included in the Keys Ranch Administrative Closure Unit, which bisects the Keys Ranch Reservoir and wilderness is located adjacent to the Cow Camp reservoir, there are no actions proposed to occur in these areas.

Conclusion/Cumulative Impacts: Impacts to wilderness would range from negligible to minor and would be temporary. There would be no additional cumulative impacts to wilderness resources. There would be no permanent impacts and no impairment of park wilderness resources.

Park Operations/Partnerships

Impacts of Alternative 1

Administration

There would be no new impacts to park operations as a result of the implementation of Alternative 1. The park would continue to rely on existing staffing and funding to support Keys Ranch operations. Administration of the site, including retaining the current boundary of the closed area to assist with the protection of Keys Ranch, the sensitive bighorn sheep herd, and rare plants in the vicinity would continue as a long- term minor to moderate beneficial effect. It would also include maintaining the existing parking area, caretaker's trailer site and vault toilets in the same locations, as well as seeking to maintain (depending on further evaluation) some water level in the dams to provide water for park operations and firefighting.

Safety/Security

The park would also continue to recruit and use site caretakers to assist with maintaining the site and its safety and security would also continue as a long- term negligible beneficial effect because although the caretakers offer a presence at the site, they would continue to be unable to enforce the administrative closure if confronted and their presence would also continue to be punctuated by their own periodic absences to obtain supplies or on leave days, as well as the park's inability to secure full- time year- round caretakers.

To aid in fire protection, the park would begin to implement the recommendations of the recently approved Fire Management Plan (NPS 2005), including providing additional vegetation clearance around structures and beginning to evaluate methods to secure the site in case of fire.

The occasional presence of park staff (during public programs, maintenance and resource management activities and law enforcement rangers on patrol) would continue to contribute a small degree (negligible to minor) of site security primarily during daylight hours.

Safety issues and issues associated with potentially hazardous materials would continue to be treated as a high priority, with immediate remedial or investigative actions required, a long- term negligible to major beneficial impact, depending on the nature of the incident. Clean- up of mining tailings, however, would occur upon securing funding (see *Water Resources* section above).

Although instances of vandalism and theft of Ranch objects are relatively rare and incidents of accidents at the Ranch associated with other than heat illnesses have been rare to non- existent, there would likely continue to be concerns with the number of objects from the Ranch era lying unsecured at the site. As feasible, given other park priorities and funding and caretaker expertise, existing conditions would likely continue and the park would continue to be unable to account for or to properly take care of these items.

Interpretation and Education

Although the park desires to retain the current structure and management of the interpretive and educational programs offered at Keys Ranch, these could diminish under this Alternative if the additional funding to support them is not found. Currently, these programs are only funded through the end of September 2005. If they are lost, they would reduce the ability of the park to fulfill its mandates for interpretation and visitor use under the Historic Sites Act, and the acquisition and management of the Keys Ranch as a structure listed on the National Register of Historic Places in the National Park System, a short- to long- term minor to moderate adverse effect, depending on the length of time visitor access was curtailed.

Maintenance

Preservation and maintenance efforts at Keys Ranch would continue to be non- systematic and based on the ability to secure specialized funding sources that would contribute additional needed money to park base operations, a long- term moderate adverse effect. Park staff would continue to hone the skills needed to maintain the structures as appropriate training or detail opportunities were available to them. The non- historic shed near the caretaker's trailer site would continue to be used to stage maintenance equipment. Equipment unavailable at the Ranch would continue to be transported as needed and would continue to impact the ability to work at the Ranch on call, a long- term minor adverse effect.

Management of Non-Museum Collections

The array of non- museum objects at the Ranch would continue to be minimally treated or treated only as needed following specific damaging events, such as storms, vandalism or evidence of theft. There would be continued efforts to use and preserve these objects and/or to maintain representative objects on display. Although the park desires to maintain these items, it is likely that under this Alternative, they would continue to need to focus priorities in a reactive, rather than proactive manner, given other park priorities and systems. Over time, it is likely then that these items would continue to deteriorate and to offer a reduced sense of the expansive nature of Bill Keys collecting and hoarding of potentially useful objects.

Impacts of Alternative 2 (including Actions Common to All)

Differences associated with the management of Keys Ranch under this Alternative are highlighted below. Where no differences are mentioned, actions would be the same as in Alternative 1 and would continue to have the same beneficial or adverse impacts.

Administration

Compared to Alternative 1, the park would seek new internal sources of funding and staffing to support Keys Ranch operations. Hiring a partnerships coordinator to implement the actions (particularly of Alternatives 3- 5) would be identified on the park's position management priority list. Under this Alternative, possibly through this additional staff resource, the park would begin the process of identifying groups and funding sources that could aid in the preservation of Keys Ranch, including the necessary expertise to preserve Ranch resources, particularly those associated with mining. Although none of the actions called for by this Alternative call for specific additional staff beyond the partnerships coordinator, additional permanent and/or volunteer staff and/or changes in responsibilities of existing staff would be required to fully implement it. The notable increase in responsibilities associated with better, more systematic maintenance of Keys Ranch historic structures would, in particular, require additional staff and funding or major bouts of specialized historic preservation funding.

Safety/Security/Resource Protection/Maintenance

Management Policies (NPS 2001:5.3.1) states that "the National Park Service will employ the most effective concepts, techniques and equipment to protect cultural resources against theft, fire, vandalism, overuse, deterioration, environmental impacts and other threats, without compromising the integrity of the resource." As a result, systematic improvements would be

made to aid the preservation of Keys Ranch structures and to secure their preservation against theft, fire, vandalism and other threats under this Alternative. These would include:

- investigating the feasibility of the preliminary alternatives for the Keys Ranch, Cow Camp and Barker dams;
- reusing a portion of the Equipment Shed for storage of additional materials needed for maintenance and resource protection at Keys Ranch;
- implementing vegetation setbacks and/or irrigation to increase fuel moisture in the vicinity of Keys Ranch structures;
- developing a fire protection strategy for the Ranch (protection from ignition sources – lightning, Wildland fire, arson; and adding defensible space, etc.);
- developing and implementing a prioritized preservation strategy for Keys Ranch structures;
- conducting routine, rather than as needed, cyclic maintenance;
- increasing the frequency of staffing at Keys Ranch; and
- exploring the development of appropriate technology security systems for the Ranch.

Together, these measures would have a moderate beneficial effect on increasing both resource protection and safety/security at Keys Ranch but would require increased attention to Ranch resources, a minor to moderate adverse effect on current staffing resources or would be implemented over time as additional funding and staffing, including changes in responsibilities permitted.

Interpretation and Education

Although partnership activities would remain the same as those actions in Common to All and in Alternative 1, most actions associated with the implementation of this Alternative's interpretation and education goals (maintenance of existing programs and functions along with slight expansion of materials that could be provided to visitors such as brochures), with the exception of providing long- term funding for the program could be done using existing staffing over time.

Management of Non-Museum Collections

As long as it was feasible the park would continue to display representative non- collection items at Keys Ranch. As opportunities arose, curation of additional high priority objects could result. Aside from seeking out an industrial curator to focus priority preservation efforts on these objects, actions associated with them would remain the same as in Alternative 1, resulting in a negligible to minor long- term beneficial effect on those resources selected for additional preservation efforts coupled with a long- term negligible to minor adverse effect on those resources either too numerous, too costly or too deteriorated to effect additional preservation measures for.

Impacts of Alternative 3

As noted above in Alternative 2, impacts associated with this Alternative would be the same as those described for Alternatives 1 and 2 with the exception of the differences highlighted below.

Administration

In addition to the internal sources of staffing and funding called for by Alternative 2, the park would also seek additional external sources of funding through community partnerships, in- kind services, and appropriate historic preservation grants to secure successful long- term preservation efforts for Keys Ranch, a long- term minor to moderate beneficial effect on Keys Ranch resources. Committing key park staff to this effort, until it was well underway could result in a short- term minor to moderate adverse effect on the implementation of other park priorities, without additional influxes of start- up funding and staffing. As a result, the complexity of managing the educational, interpretive and historic preservation programs at the park would

greatly increase, and could have short- term negligible to moderate impacts on park staff as well as long- term beneficial impacts on the efficiency of park operations.

Safety/Security
If a year- round caretaker could not be recruited, the park would develop a short- term, local resident (gateway community)- based program to provide regular onsite caretaking. Local historical societies, preservation groups, 4- H and scout groups, local business interests and others would also be recruited to effect site rehabilitation and preservation efforts.

Resource Protection
To assist with the restoration of machinery, structures and equipment at Keys Ranch, the park would focus on getting local groups and establishing short- term residential programs, such as Elderhostel or National Park Service preservation teams, to enhance and maintain local interest, support, maintenance and rehabilitation of Keys Ranch structures. The development of such an intensive site caretaking/maintenance program would require the use of an onsite coordinator to establish and maintain effective working relationships, including priorities for implementation and needed training and equipment. By developing relationships with specialists associated with mining, farming, ranching and other activities conducted at the Ranch by Bill Keys, the park could use community volunteer groups from near and far to support the restoration of historic structures and functions.

Interpretation and Education
Under this Alternative, park staff would be called upon to develop additional interpretive programs, partnerships and working relationships with a wide variety of local and regional experts, the general public and young people to carry out the implementation of expanded interpretive operations. The expansion of these interpretive programs, the resultant partnerships and active solicitation of historical information about Keys Ranch would result in long- term opportunities to effect preservation of the Ranch and for continual improvement of and access to Keys Ranch resources, including, if possible, reopening part of the Ranch House to park visitors.

Maintenance
Although maintenance actions would be the same under this Alternative as Alternative 2, including the development of a prioritized list of historic structure preservation maintenance, rehabilitation and restoration actions, along with adequate training, support, historic preservation regular and cyclic as well as additional external funding, there would also be the development of a facility to store equipment and materials needed to maintain the Keys Ranch. Such storage would either be within an existing (rehabilitated) structure or in a new structure. As a result, there would be an increased ability for the park to respond to relatively routine maintenance needs, without extensive travel time to seek most equipment and materials, a minor long- term beneficial effect.

Management of Non-Museum Collections
Under this alternative, the park would restore selected equipment to working order for demonstration use during interpretive and educational programs. If appropriate or needed, representative demonstration (non- historic) equipment could be acquired and used. Maintenance/preservation treatments would be focused on priority items with unique value, a long- term beneficial effect on some of these non- historic, but nonetheless important items, while contributing inadvertently (by not effecting preservation treatments on) other items, a long- term negligible to moderate adverse effect.

Impacts of Alternative 4
Impacts associated with this Alternative would be the same as Alternative 3 except with respect to the following additional actions it calls for:

- increase collaborative opportunities to manage and interpret Keys Ranch;
- secure a maintenance worker/caretaker to provide additional site safety and security;
- tell an expanded Keys Ranch story by utilizing historical societies, museums and other applicable organizations;
- increase staff expertise in or access to all applicable construction trades used in maintaining Keys Ranch;
- consider constructing a comprehensive electronic surveillance system (including providing power generation, if needed); and
- consider constructing a residence for a site manager/maintenance worker/caretaker outside of the Historic District or obscured from the District.

Together these actions would have both short- and long- term minor to moderate beneficial effects on more effectively providing resource protection and site security at the Keys Ranch. They would also result in an increased array of negligible to moderate effects on park operations through the need to provide the additional site manager/maintenance worker and to secure funding and support for the construction of a site manager residence onsite or nearby as well as the impacts of providing increased staff training and several one- time costs, associated with the site caretaker residence and surveillance system. In addition, depending on the type of residence and utilities needed and ultimately the site selected, additional environmental analysis could be required to document impacts.

Impacts of Alternative 5

Compared to Alternatives 1- 4, this Alternative would have the greatest impacts on park operations and these would include both beneficial impacts on resources and adverse impacts on the long- term ability of the park to sustain a high degree of operations at Keys Ranch, given the existing condition of the resources and the likely increasing costs associated with maintaining them over time in a condition that fulfills the intent of their listing on the National Register.

Even so, most impacts associated with this Alternative would be similar to those identified in Alternatives 3 and 4, because most actions would be the same. Where it differs is with respect to the number of structures and objects that would be used and maintained in operating condition.

Instead of seeking additional internal and external funding (Alternative 3) or collaborative partnerships (Alternative 4) the park would need to do both to sustain expected operations, a sustained long- term park operations need for additional staff to manage this effort. In addition, the park would seek to decentralize the operations at Keys Ranch by maintaining a cadre of staff who would serve on a Keys Ranch Comprehensive Plan implementation or stewardship team to solve short- and long- term problems associated with implementation of this Alternative, including conflicting priorities, applications to disparate funding sources for proposed actions and other implementation needs, an action that would contribute to a long- term beneficial impact on park operations associated with implementing planned actions.

One- time funding would be sought to relocate and reconstruct the visitor parking lot and vault toilets out of the Keys Ranch Historic District, and to relocate the existing caretaker site (as also called for by Alternative 4) outside the historic district as a park site manager residence or rotating caretaker residence, and to construct a small visitor use facility to support modified operations at Keys Ranch. In addition, the park would seek funding to restore additional long- term function to the three Keys Ranch dams, as well as Cow Camp and Barker dams. These actions would likely require separate environmental analysis, but could be combined in one implementation document pending site selection and identification of proposed actions. Combined, these proposed actions would have major beneficial and adverse effects on park operations and a short- term moderate effect the ability of visitors to experience the site. Long- term effects would

include moderate to major improvements in the ability of the park to guide preservation of Keys Ranch by itself, community groups and volunteers and to focus efforts on the resources that need them most at any given time. Eventually, Keys Ranch would need only routine preservation maintenance activities and slight changes in interpretive, educational and demonstration programming.

Conclusion: Although there would be short- term minor to major impacts on park operations under all Alternatives, except Alternative 1, these impacts would, pending an influx of funding and staffing as needed to support the operations, all result in better preservation of Keys Ranch resources. In time, the short- term adverse impacts on park operations would give way to long-term beneficial impacts, providing initial efforts to systematically identify preservation priorities, internal and external funding sources and staffing could be sustained. Alternative 2 would require the least dramatic changes to existing park operations, followed in order by Alternatives 3, 4 and 5. Though major changes in park operations, such as the type and frequency of interpretive programming, what gets restored at Keys Ranch and beyond, what degree of community involvement is required to supplement National Park Service efforts, and what structures are retained, improved, relocated, constructed or reconstructed varies among the alternatives, all would also result in these long- term minor to moderate improvements in park operations.

Cumulative Impacts: Over time, as the management of Keys Ranch has alternately slowed and intensified as various park planning efforts were initiated and then placed on hold, often due to varying assessments of the significance of Keys Ranch resources by a variety of National Park Service and other contracted staff, the resources have been inadequately managed and have suffered negligible to moderate deterioration that has begun to be remedied more consistently by the park, following additional evaluations of the historic structures and analysis of appropriate preservation maintenance/rehabilitation treatments. Proposed actions under any of the Alternatives described in this Environmental Assessment would build upon the initial preservation work at the Ranch and in addition would give added priority to highlighting both the interpretive and historic values associated with the Ranch and other Keys- related resources in the park. Alternative 1 would result in negligible beneficial impacts, while Alternatives 2- 4 would result in minor to moderate beneficial impacts and Alternative 5 in moderate to major beneficial impacts compared to existing conditions.

VII. CONSULTATION AND COORDINATION

Joshua Tree National Park conducted both internal scoping with appropriate NPS staff and external scoping with the public and interested and affected groups, agencies, and tribes to determine the range of issues to be discussed in this Environmental Assessment. Staff of Joshua Tree National Park and resource professionals in the NPS Pacific West Region conducted internal scoping. This interdisciplinary process defined the purpose and need, identified potential actions to address the need, determined the likely issues and impact topics, and identified the relationship of the preferred alternative to other planning efforts in the park.

A press release initiating the public scoping process and comment period was issued on April 28, 2005. The press release resulted in articles in the *Desert Trail* (*Keys Ranch Future Eyed* 6- 2- 05), and *HiDesert Star* (*Park Probes Public for Keys Ranch Ideas* 5- 28- 05) and announced on one of the local radio stations. A public scoping meeting was held on June 8, 2005 at Copper Mountain College in the town of Joshua Tree. Approximately a dozen people attended and provided comments on the development of this plan. Public scoping comments are summarized that section near the beginning of this document.

Letters noticing Keys family members, the U.S. Fish and Wildlife Service, the California State Historic Preservation Officer and Native American Tribes (Agua Caliente Band of Cahuilla Indians, Cabazon Band of Cahuilla Mission Indians, Chemehuevi Indian Tribe, Colorado River Indian Tribes, Fort Mojave Indian Tribe, Morongo Band of Cahuilla Mission Indians, Soboba Band of Luiseno Indians, Torres- Martinez Band of Desert Cahuilla Indians, Twentynine Palms Band of Mission Indians of California, and the Native American Heritage Commissioner) were sent on May 31, 2005. Additional consultation will occur during the public review period.

This Environmental Assessment are available for a **thirty- day** public review period from September 25 – October 25, 2005. At that time, a press release will be distributed to people and businesses who have expressed an interest in the project. The press release will also be mailed to a list of persons and agencies that have expressed interest in Joshua Tree National Park proposed actions and events. Included will be organizations such as The Wilderness Society, Sierra Club, etc. The Environmental Assessment will also be mailed to local libraries, organizations and individuals that have requested to receive a copy of the Environmental Assessment as well as others who request copies during the review period. The Environmental Assessment will also be available on the park's website, located at http://www.nps.gov/jotr.

Comments on this Environmental Assessment should be directed to:

Superintendent
Joshua Tree National Park
74485 National Park Drive
Twentynine Palms, California 92277- 3597

If reviewers do not identify substantial environmental impacts, this Environmental Assessment will be used to prepare a Finding of No Significant Impact (FONSI), which will be sent to the National Park Service Pacific West Regional Director for signature.

During the public review period, additional consultation will occur to affirm determinations of effect with the California State Historic Preservation Office and the U.S. Fish and Wildlife Service. Notice of the concurrence with the determinations of effect for historical resources will be identified in the FONSI for this Environmental Assessment, if prepared (see above).

For more information concerning this Environmental Assessment, please contact park Chief of Natural and Cultural Resources, Paul DePrey at (760) 367- 5560, or Chief of Interpretation, Joe Zarki at (760) 367- 5520. For a copy of this document, please call Joshua Tree National Park (David Denslow) at (760) 367- 5502.

The following people and agencies were consulted during the preparation of this Environmental Assessment:

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California Native Plant Society

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Appendix 1
Keys Ranch Planning Background

Park Planning Documents

GENERAL DOCUMENTS
The following major plans and reports on the Keys Ranch illustrate the breadth of planning that has taken place at the site over the past 30 years:

Resources Management Plan (1993): Cultural resources management goal: Perpetuate and interpret evidence of human existence in, and adaptation to, the Southern California desert environment.

Objectives:

Develop a cultural resources research plan for archeology, history and ethnography to create baseline inventories that will assist in the monitoring and management of these resources.

Survey, protect and curate archeological sites and associated artifacts through monitoring, anonymity and education.

Document and protect the historic sites and associated artifacts through mapping, written history, curation and mitigation/stabilization.

Identify and manage any ethnographic resources such as sacred or other traditional use sites of cultural importance to contemporary Native American Indian neighbors through interview and consultation.

Research and document prehistoric and historic water sources to understand human use and manipulation of these resources.

Manage and curate the monument's diverse museum collections by systematic collection, conservation, cataloging and research.

Backcountry and Wilderness Management Plan (1999): In 1999 the Backcountry and Wilderness Management Plan was completed as a supplement/amendment to the 1995 General Management Plan. This plan addresses management prescriptions for the protection and use of backcountry and wilderness areas, trails, roads, climbing, camping, closures, group size limits, artificial water sources, and desert tortoise protection. *The plan notes that the ranch is a historic site closed to the general public and closed for overnight use.*

DOCUMENTS WITH RECOMMENDATIONS SPECIFIC TO KEYS RANCH
Collection Management Plan (1990)
Recommendations in this plan state: "A curator of mining or technology should evaluate the remains of the collection at Desert Queen Ranch and related stored items to determine their place in the park's museum collection (p. 7)."

"A specialist should determine those objects which are significant or representative, and those of high value, in order to make decisions concerning placement or retention in the museum collection. The park should de- accession items left in place at the ranch, following this review. The park should request a Cultural Landscape study of the Desert Queen and other mining areas. Until a subject matter expert appraises the collection and makes recommendations regarding

disposition and further collection, the staff should not add these types of materials [mining] to the park museum collection p.7."

Storage issues related to recordkeeping were discussed . . . the issue of the Desert Queen Ranch, and the appropriate treatment of cultural property which is now in and around the ranch grounds. Some of these pieces were assigned catalog numbers by the study team, and have been classified as controlled property, but the issue of whether to treat any or all of this material as museum property needs to be addressed (p. 22).

Convene a Board of Survey to document items missing from the collection, including those missing from Keys Ranch (p. 25). (A 1988 inventory showed 74 items missing from Desert Queen Ranch and 15 from Wall Street Mill.)

Stop cataloging material at Keys Ranch pending a decision about which items should be placed in the museum collection. De- accession cataloged material now at Keys Ranch and convert it to park, rather than museum, property following review by appropriate expert (p. 25).

Joshua Tree National Park General Management Plan/Development Concept Plans (1995):
The General Management Plan (GMP) provides the basic foundation for decision- making for each unit of the National Park System. The GMP contains the following management direction for the preservation, use and interpretation of the Keys Ranch.

Two primary interpretive themes noted in the GMP directly affect interpretation of the Keys Ranch (General Management Plan 1995: 10):

3) Plants and animals have evolved to survive in the heat and drought . . . Humans, from prehistoric times to present, also adapted to an environment with little water. People who have made this area their home have adapted and have provided a colorful and varied human history.

5) Deserts have suffered a great deal of human abuse. . . Fragile desert ecosystems survive in a delicate balance. They quickly manifest event he subtle environmental changes brought about by humans. . .

GMP Management Prescriptions for National Register Sites (1995:29)

Barker Dam

The Barker Dam is within a large canyon containing a water source that was easily dammed. Although other water impoundments existed, the first Barker Dam was built around 1902 replacing the Meyers Dam located further upstream. The dam still impounds water and is a hiking destination for visitors to the park. Other elements in the area include a livestock watering tank and feed trough below the dam. A cattle round- up area occurred south of the dam and may have been the location of one of Bill McHaney's cabins which no longer exists. This area was used by Keys for grazing, branding and cattle round- up. The Barker Dam also contains over twenty prehistoric sites which may have occurred here because of the availability of water (NPS 2004). [Barker Dam contains an inscription noting when Keys added to it.]

Resource: Stone and concrete dam built across a natural tank to impound rainwater for cattle became part of the homestead of William F. Keys and was an important watering hole.
Treatment: Preservation of historic site and scene.
Use: Self- discovery site for interpretation on designated trail; combined sign for interpretation and education about protecting resources.

Cow Camp

Cow Camp is of local significance for its contribution to the "Cattleman's Empire" sub- theme and for its association with William F. Keys and his agricultural and ranching influence in the Mojave desert. Located in a small canyon south of the Keys Ranch, the area was first used in 1879 by the "McHaney Gang" to water cattle and provide a place to live. The canyon created a sheltered area for cattle to water and graze. Today the area contains the dam, a house ruin (chimney stack), watering trough, well, retaining wall and barbed wire fence (collapsed). Keys used the area primarily as a grazing area with limited agricultural use (NPS 2004).

Resource: Ruins of buildings and a curved concrete dam built by William F. Keys in the late 1940s to water cattle; a well was dug in the late 19th century; important to raising livestock.
Treatment: Preservation of historic site and scene.
Use: Restricted area for wildlife management; special guided tours for cultural and natural resources interpretation; combined sign for interpretation and education about protecting resources.

Desert Queen Mine
Resource: A late 19th century gold mine; remains include tunnels, shafts, and adits, a stone building and some foundations; mine said to have produced several million dollars between 1895 and 1941.
Treatment: Preservation of historic scene.
Use: Self- discovery site for interpretation on designated trail; combined sign for interpretation, education about resource protection and visitor safety; maintenance of safety barriers over mine shafts and adits.

Keys Ranch
Resource: Homestead of William F. and Frances Lawton Keys; includes ranch house, school house, several related structures, and a concrete dam that stored water; headquarters of horticultural, livestock and mining operations; artifacts remain.
Treatment: Preservation of historic structures, site and scene; stabilization of structural components.
Use: Restricted area for historic preservation; scheduled guide tours for cultural resources interpretation.

Desert Queen Mine
Resource: Late 19th century gold mine; remains include tunnels, shafts, and adits, a stone building and some foundations; mine said to have produced several million dollars between 1895 and 1941.
Treatment: Preservation of historic scene.
Use: Self- discovery site for interpretation on designated trail; combined sign for interpretation, education about resource protection and visitor safety; maintenance of safety barriers over mine shafts and adits.

Wall Street Mill
Resource: A cattle- watering and ore- milling site active from 1896 to 1943; two- stamp mill still in place.
Treatment: Preservation of historic structure, site and scene; stabilization of historic structure.
Use: Self- discovery site for interpretation on designated trail; combined sign for interpretation, education about protecting resources.

Keys View
Resource: Keys built the road to the overlook atop the Little San Bernardino Mountains that offers a majestic view of the Salton Sea, Coachella Valley and Colorado Desert south of the Monument (Green 1983).
Treatment: *Acknowledgement of Keys View and its connection to Bill Keys is not mentioned in the 1995 GMP.*

Lost Horse Unit, Development Concept Plan (included in the May 1995 GMP)
Development concept plans were included in the 1995 GMP to resolve specific issues in each of the park's planning units. The Keys Ranch was addressed in the Lost Horse Unit Development Concept Plan. This unit includes the park's west entrance, Lost Horse ranger unit, Keys Ranch, Lost Horse Mine, Hidden Valley Campground and Picnic Area, Sheep Pass and Ryan Campground. The following recommendations for Keys Ranch were included:

- Interpretation at Keys Ranch and other historic sites would be offered throughout the unit. Keys Ranch would be the major interpretive resource in the Lost Horse Planning Unit.
- Keys Ranch would only be open to guided groups.
- Guided trips on the extensive trail system and costumed interpretation at Keys Ranch and other historic sites would be offered throughout the unit.
- An interpretive trail would be developed for the Desert Queen mine.

Backcountry and Wilderness Management General Management Plan Amendment (date?)
According to this document, the Keys Ranch site (640 acres) would be closed to the public except when accompanied by a National Park Service guide.

Museum Management Plan (NPS 2005)
This document contains an analysis and a series of recommendations for the Keys Ranch Historic District and its contribution to the park's museum collections. It notes that "the park's museum management plan has been attempting to maintain only part of the Keys collections as museum property" and that the selection of the materials for the collection vs. those left at the Ranch was somewhat haphazard, rather than systematic. It also states that "the material left at the Ranch is exhibiting a n increasing rate of deterioration" and that the park will not be able to provide even the basic levels of security and preservation for materials left at the Ranch and that even if the park had the necessary funding and staff to preserve the materials onsite, the necessary structure s and technology would effectively alter the Keys Ranch site so as to destroy its value as an historic district.

The following are the recommendations from the plan for the Keys Ranch Historic District:

- Complete a PMIS statement for a Cultural Landscape Report for the Desert Queen Ranch that will address the full range of preservation concerns.
- Systematically inventory, record, identify and assess the artifact assemblages at the Desert Queen Ranch.
- De- accession those cataloged items that are at the ranch site.
- Complete a provenance search for cataloged items current in storage. Consider de-accession and repatriation of those items to the ranch site on a case- by- case basis.
- Maintain a limited collection of personal objects from the Keys family that could be used for exhibit at locations away from the ranch site.
- Process the Keys archives, create a finding aid to this material, and make this information electronically available.

Elsewhere the plan states that it is possible to preserve the historic structures at the site and even preservation maintenance of large machinery and other items at the Ranch could be accomplished through the application funding from National Park Service cultural cyclic maintenance programs.

In addition, the plan recommends Historic Structures reports (which could be used to prepare Historic Furnishing Plans for Keys Ranch structures as needed). Finally, the plan notes that the end product of the recommendations "would be both full documentation of all of the associated parts of the resource and a series of interlocking plans to address the maintenance and

preservation of the Ranch as a whole." Without this intervention, it states "the objects at the ranch site will continue to deteriorate, will continue to disappear by theft, and will continue to be moved from place to place within the site – thus continuing to alter the historic appearance of the site."

For additional information, see the section entitled *Museum Collections* in the *Affected Environment* chapter of this document.

KEYS RANCH MANAGEMENT DOCUMENTS

Cultural Resources Management Plans

Keys' Desert Queen Ranch Preservation Study (1975)

Conducted by a National Park Service Team comprised of Western Regional Historian, Gordon Chappell, Regional Historical Architect, Robert Cox and Regional Archeologist, Roger Kelly, this study includes a brief history of the site, a location map, descriptions and black and white photographs of the main buildings at the Ranch (McCutchen 2001).

This study resulted in the nomination of the Keys Ranch to the National Register. In addition, two alternatives were identified for the ranch: 1) documentation of the site and consultation with the Advisory Council for Historic Preservation regarding a treatment of "benign neglect" due to the inability to preserve the structures of the ranch intact without extensive and expensive repairs; and 2) preservation treatment falling somewhere between stabilization and preservation with a goal to maintain the buildings for several generations, knowing that the resource would ultimately be lost.

Limited treatment recommendations, including the application of wood preservative and removal of "attractive nuisances" were included. No record of consultation with the California State Historic Preservation Office or the Advisory Council for Historic Preservation can be found to document the adverse effect of following the deterioration over time recommendation.

Instead, actions taken by the NPS over time suggest following the second recommendation, including consultation with the SHPO and ACHP in 1976 to conduct limited public tours of the ranch during the United States Bicentennial.

Keys Ranch National Register Nomination (National Park Service 1975)

Keys Ranch was determined to be of local historical significance in agriculture and mining and was listed on the National Register on October 30, 1975. (see also *Significance Statements* above)

Country Nodes: An Anthropological Evaluation of the William Keys' Desert Queen Ranch, Joshua Tree National Monument (Patricia Parker Hickman (Hunter) 1976)

Parker noted that "Keys Ranch was associated with the development of local cattle ranching, cycles of mining activity, homesteading, the creation of a rival community at nearby Twentynine Palms Oasis, the Depression economy of the 1930s and the development of the desert retirement and recreation industries."

Parker also summarized the then significance of the ranch as a National Register property: "National Register properties also must possess 'integrity,' which from a scientific standpoint means that they must be sufficiently intact to allow meaningful study. The integrity of the ranch as a body of potentially usable data is striking; it is a highly complex, highly organized site, including standing and ruined structures, clusters of machinery, artifacts and trash, modified landforms, boxes and piles of paper, clothes, photographs, magazines, books and so on. . . The ranch, then, presents an unusual opportunity to study a historical site in virtually the condition in which it was left by its occupants."

Historic Resource Study: A History of Land Use in Joshua Tree National Monument (Linda Greene 1983): This report summarized the purpose and significance of the Keys Ranch, noting that "the entire Keys Ranch area is an example of modifying a harsh environment to provide the necessities of life." It also contains an evaluation refuting many of the tenets of Patricia Hunter Hickman's *Country Nodes* report.

"The philosophy in the past has been, and should remain in the future, to perform minimal selective work to slow down the action of the elements, preserving the ranch as long as possible as a unique interpretive resource – a monument to one man's adaptation to, and unity with the desert. It is strongly recommended that no deliberate demolition or substantial alteration take place until the integrity of the resource is irretrievable."

Greene notes Keys' association with Death Valley Scotty, Roosevelt's Rough Riders (Phoenix Arizona), two stories of Keys' parentage, and his association with the following mines and people:

- copper mines and smelters of Jerome, Arizona
- Rhyolite, Nevada
- Mojave County, Arizona Territory
- Desert Hound Mine and Battle of Wingate Pass (Death Valley Scotty and his brother)
- Mother Lode country of Sierra Nevada Mountains
- Crown Prince Mine (Joe Reynolds)
- Tully Mine
- Desert Queen Mine (C.W. Roach)
- Bryant roller mill (Twentynine Palms)

This report also states that "in the long run, it has been recognized the historical scene which now exists cannot be preserved, simply due to the nature of the resource. Eventually the structures will fall and the site will deteriorate and be restored to its natural condition." It goes on to say that "In the meanwhile, only minor repairs, continuing maintenance, and structural reinforcing have been performed, primarily for safety reasons, but also in an attempt to extend the life of the structures. Because visitors do not need to enter the buildings to acquire the flavor of the spot, some reinforcing (but no major repair of fabric or hardware) could take place inside the structures and not be visually intrusive or objectionable."

Cultural Landscape Treatment Recommendations (1992):
National Park Service, Western Regional Historian, Hank Florence visited the site and outlined short- and long- term treatment recommendations documented in a memorandum dated January 6, 1992 (McCutchen 2001).

This memo identified the eligibility of the area as a cultural landscape, concurring with the 1975 analysis that the haphazardly constructed buildings lacked individual integrity for architectural significance. Other treatment recommendations included:

- The buildings were constructed in a structurally marginal manner – therefore new structural material must be identifiable as non- historic and should be internal. Work is required to make the structures weather- tight and to bring them to a reasonable level of maintenance, but this work should not make the building fabric more substantial than it was originally.
- The buildings were intended for light residential use. Rehabilitation should not expand their use potential. Visitors should view interiors from windows and doorways. Access should be limited. The buildings are not suitable for interior tours.
- Historic American Buildings Survey (HABS) documentation should be completed and a detailed site plan developed.
- A Cultural Landscape Report should be developed.

- Upon initial structural stabilization, a plan for continued maintenance should be developed. That plan should take into consideration the following issues: the nature of the resources, their remote location, and the skills and knowledge of the people who will likely execute the work.

As a result of these recommendations, several of the ranch buildings were stabilized between 1992 and 1993, HABS documentation was completed in 1993 and a Cultural Landscape Inventory (Level 0) was completed in 1998 or 1999.

Historic American Buildings Survey, Written Historical and Description Data (1993)

Rescue Excavation at Huntington Mill, Keys Desert Queen Ranch, Joshua Tree National Park (Warren and Schneider 1997a): See information under *Archeological Resources* in *Affected Environment*.

Incomplete Unedited Draft Archaeological Excavations of Historic and Prehistoric Sites at Keys Ranch, Joshua Tree National Park (Warren and Schneider 1997b) and Draft Archaeological Excavations and Surface Collection of Historic and Prehistoric Sites at Keys Ranch, Joshua Tree National Park (Warren and Swope 1998): These archeological investigations were performed to determine both the pre-Keys and Keys periods at the ranch. According to archeological investigations in the vicinity of the adobe barn, it was expected that excavation of the barn would further define the configuration of the structure, add to understanding of the techniques used during construction, discover the various uses of the three barn rooms over time and determine how and why the structure fell into ruin. See summary under *Archeological Resources* in *Affected Environment* section.

Keys Ranch Road Profile Field Notebook (Schneider and Wright 1997): This notebook consists of background data for the above reports.

Cultural Landscape Inventory (Level 0) (Mark Luellen 1998): See update in NPS 2004 below.

Desert Queen Ranch Preliminary Stabilization Recommendations (1999): National Park Service, Pacific West Regional Historical Architect, Michael P. Scott visited the Ranch and developed a report detailing recommendations for historic preservation according to the Secretary of the Interior's Standards for Historic Preservation. Included in this report was a detailed analysis of how the treatment recommendations would fulfill the goal of preserving the Keys Ranch in "an arrested state of decay." Scott detailed the differences between true preservation maintenance, according to the Secretary's Standards, and the stabilization measures recommended and why they were philosophically and physically more appropriate for the preservation of the Keys Desert Queen Ranch.

Scott noted that historic preservation (which usually returns a building to an "as good as new" condition") was somewhat of a conundrum at the Ranch, given the fact that the deteriorated, haphazardly constructed, and un- painted building fabric was itself a character- defining feature of the cultural landscape. Therefore recommendations included:

- Updating the Keys Ranch National Register Nomination because some additional structures should now be considered eligible (Joshua Tree Sculpture, Irrigation and Road Systems and Crane), while some listed structures had deteriorated unrecognizably over time (Adobe Barn Ruins) as noted on the most recent (then 1999) update of the List of Classified Structures.
- Changing the preservation treatment recommendations for Keys Ranch structures from "stabilization" to "preservation" in the park Resources Management Plan in accordance with the Secretary's Standards and the LCS "Should be Preserved and Maintained" or in the case of ruins "May be Preserved and Maintained."

- General treatments: such as leaving the interior supplementary structural members in place permanently to hold the frame of the structure intact; *not* using wood preservatives (unlike the earlier recommendations) since they change the color of wood or paint; repairing doors and windows; replacing only missing siding (as appropriate to maintain a substantially weather- tight structure); maintaining existing roofing in as water- tight a condition as possible; and implementing Integrated Pest Management measures.
- Other specific treatments for Keys Ranch listed structures.

Pest Management Report (Hoddenbach 1999): Recommendations in this report are incorporated into the McCutcheon report (below).

Cultural Landscape Inventory (Level 2), Keys Desert Queen Ranch Historic District [NPS 1999 (revised 2004)]
While a Cultural Landscape Report is a treatment document and presents recommendations on how to preserve, restore, or rehabilitate the significant landscape and its contributing features based on historical documentation, analysis of existing conditions, and the Secretary of the Interior's standards and guidelines as they apply to the treatment of historic landscapes, a Cultural Landscape Inventory records impacts to the landscape and condition (good, fair, poor) in consultation with park management.

The following recommendations are contained within the CLI (NPS 2004):

Historic Structures and Non-Historic Objects: Since Keys' death, the NPS has reportedly moved a number of objects, vehicles, and small structures from their original locations on the ranch. If true, this compromises the integrity and the interpretive potential of the site by changing the configuration of the ranch from that which existed during the period of significance. No additional relocations should be made without proper documentation and compliance. Objects that have been moved from their original locations subsequent to Keys' death should be returned to those original locations (or close proximity) if enough information exists to make an informed determination.

Barker Dam: Relocation of the parking area at the Barker Dam is currently planned as part of a visitor facility improvement program. Consideration should be given to removing any noncontributing features associated with the existing parking area.

The (then) proposed road improvement and parking lot project slated for the Barker Dam will affect the rural character of the landscape, realign a historic road trace, and increase use levels, all of which could impact historic resources around Barker Dam. Proposed construction work should minimize impacts to cultural resources. The park should consider the feasibility of additional interpretation, ranger presence and other resource protection measures to mitigate the impacts of increased visitation on the resources.

The visitor staging area at the Desert Queen Ranch, including the visitor parking area, restrooms, maintenance shed, VIP trailer, and "gravesite", are not part of the Keys ranch complex and constitute intrusions to the historic landscape. Consideration should be given to phasing as many of these services/activities out of the historic district as is feasible. One option would be to relocate the staging functions at the site near the Desert Queen Ranch property boundary fence where groups currently have to wait until the ranch gate is opened by a ranger.

The current visitor staging area alters the sequence by which visitors would have experienced the ranch historically. The original experience or sense of arrival at the Desert Queen Ranch could easily be restored through relocation of the staging area.

Orchard and Gardens: Although in a state of decline at Key's death, the orchards and garden remnants should continue to be watered and maintained to promote their longevity. An arborist should be consulted to review current maintenance practices and ensure protection of the remaining trees and plants.

The park should immediately begin a budding or grafting program for the three remnant pears to ensure continuation of the remaining historic orchard stock. Replanting of any fruit trees in the future should include plantings of the historic pear tree stock. Records should be searched and oral interviews of Keys descendants made to see if the specific types of fruit trees that Keys had can be determined (e.g. what type of apples). Replacement with non- historic fruit tree species should be avoided if at all possible. Grafts or budding from any historic stock at other homesteads in the vicinity could also be explored if it was thought that those trees had also been grown on the Desert Queen Ranch.

No attempt at restoring the vegetable or household gardens should be made until a Cultural Landscape Report is completed. The CLR would provide treatment and management guidelines for all of the orchard and garden areas around the ranch complex.

Irrigation System/Site Maintenance: The caretakers at the site perform the important function of ensuring that the site is maintained and damage to the resources minimized. Because these volunteers are not permanent, the park should carefully review with them appropriate maintenance and preservation activities. Irrigation pipes, furrows, and existing vegetation should be preserved in place and documented before any changes to these features are implemented.

Vegetation: Some of the agricultural and household garden areas at the Desert Queen Ranch have been reclaimed by native vegetation. A Cultural Landscape Report would provide treatment recommendations for these areas with appropriate guidelines for minimizing any loss that threatens the setting and feeling of the ranch.

Buildings: Although the dry climate in Joshua Tree National Park significantly reduces the metallic and wooden deterioration mechanisms commonly associated with abandoned structures, those still standing are in danger of decay. Doors are left open exposing interiors to the elements and wildlife, and solar degradation is damaging all exposed structural elements. Current efforts to repair and seal these structures should become part of a cyclic maintenance program.

Dams: Two documents raise concerns about the structural integrity of the dams in the study area. (Maintenance Assistance Report: Inspection of Dams, Joshua Tree National Monument, California, Richard Ohmstede, structural engineer, NPS, DSC, April 1980, and Downstream Hazard Classification, Lower, Middle, and Upper Keys Ranch Dams, Joshua Tree National Monument, California, no author, NPS, June 12, 1992). The structural and safety concerns raised in these reports should be addressed to ensure the safety and protection of both the resources and visitors.

Safety/Security: Unsupervised visitation at the Desert Queen Ranch, Cow Camp and Barker Dam has the potential to impact important features within these landscapes either

through vandalism or theft and includes the loss of collections material and damage to prehistoric artifacts. Campers at the Hidden Valley campground often hike along backcountry trails to get to the Desert Queen Ranch. Because these visits are often made when there is no site supervision, the visitors can create both safety and security issues at the ranch. The caretaker's presence, interpretative materials and visible resource protection presence are critical to ensure protection of these resources.

Archeological Resources: Along the entrance road at the ranch, tour groups are shown prehistoric rock slicks (grinding pits). Grinding stones (manos) are used for demonstrating how Native Americans ground food. Use of the grinding stones on the slicks can damage these prehistoric features. Accordingly, the site should continue to be interpreted, but not physically used in order to preserve what remains of the rock slicks.

Farming/Ranching: Visitors should be kept from walking on agricultural plots where furrowing is still present until appropriate treatment guidelines are developed for these areas. Furrowing, and other evidence of crops, can provide important information about how Keys farmed these areas. Furrowed areas in the vegetable garden and near the five-stamp mill are two of the more obvious areas still evident.

When the park decides to manage and treat an identified cultural landscape, a CLR may be necessary to work through the treatment options and set priorities (NPS 2004).

Joshua Tree National Park Historic Preservation Report: Keys Ranch Historic Structures Stabilization Project (NPS 2001b): In August 2001, a preservation crew composed of tradesmen from the NPS Intermountain Support Office – Santa Fe and Hawaii Volcanoes National Park undertook the stabilization of 14 structures at the Keys Ranch complex at Joshua Tree National Park. The stabilization of these structures was guided by cyclic maintenance recommendations prepared by a Historical Architect from the NPS Pacific Great Basin Support Office.

This report concludes: Overall, the structures of the Keys Ranch Complex are suffering from exposure to the desert environment. Little can be done to these structures to provide overall protection from the elements. Subsequently, as materials deteriorate they will need to be replaced in kind. When replacement of exterior woods is undertaken such as siding, and door and window sashes, care should be taken to blend the new material with the existing through the use of appropriate techniques. . .

There has been substantial discussion within the historic preservation community on the appropriateness of blending new materials to match existing materials when replacing in kind. This debate can be polarized at times with one end of the spectrum arguing for no treatment of new materials (Colby 1998) while others argue that new materials should near or exactly match. While [there is] interpretation of the *Secretary of the Interior's Standards for the Treatment of Historic Properties*, the standards do offer some guiding principles to address this issue.

In particular, an emphasis is given to the idea that, "new material will match the old in composition, design, color, and texture" (NPS 1995: 18). It is recommended that new material be blended with the existing to the extent that the average visitor does not easily distinguish it, but upon close scrutiny, the new material is readily visible.

Dam Inspections

Maintenance Assistance Report: Inspection of Dam, Joshua Tree National Monument (Richard Ohmstede 1980):

The author of this report, Richard Ohmstede made the following recommendations based on his evaluation of Barker, Cow Camp, Upper and Lower Keys and Squaw Tank dams:

"The five small dams in Joshua Tree National Monument are non- engineered, crudely built types of structures thus making them difficult to evaluate. The dams have cross- sectional proportions below recommended minimums, are inadequately keyed into rock, lack contraction joints, and have questionable quality of concrete, which is inadequately reinforced. An approximate analysis shows that factors of safety for stability against sliding and overturning are generally les than one, thus indicating the dams would fail.

Even though the dams do not meet design engineering standards . . . it is not necessary to strengthen the dams or permanently lower the water level because of the following reasons:
1) The dams are small and located in remote areas so potential loss of life and property damage is minimal in the event of failure.
2) The dams have been stable for many years and the stone and concrete used for construction remain in good condition.
3) Any proposed method for strengthening the dams would be expensive, difficult and impact the dams' historical significance.

It is recommended that the small trees and other vegetation growing on the downstream face of the dams be periodically removed to prevent deterioration of the structures."

Downstream Hazard Classification: Lower, Middle and Upper Keys Ranch Dams, Joshua Tree National Monument (1992): See summary under *Water Resources* in *Affected Environment*.

Draft Management Plans

Draft Desert Queen Ranch Management Plan (1997): Rosie Pepito, then Joshua Tree National Park Branch Chief Cultural Resources, prepared a preliminary draft management plan to integrate historical preservation, archeological preservation, natural resources management, interpretation, maintenance and protection. Pepito transferred to another national park with the plan still in draft form (McCutchen 2001).

Draft Management Plan Desert Queen Ranch (Spearing 1999):

- Keys Ranch Mission Statement

  It is the primary mission of the Desert Queen Ranch to preserve and interpret the early 20th century Euro- American homesteaders' adaptations to the Mojave Desert Environment.

  It is the secondary mission of the Desert Queen Ranch to preserve and interpret earlier human adaptations when the evidence is either unique to the ranch area or of such intrinsic importance to warrant inclusion in the management of the site.

  It is the tertiary mission of the Desert Queen Ranch, drawing on the Keys' family experience, to educate the public about the future sustainability of life in a desert environment.

- Keys Ranch Interpretive Themes (from Spearing 1999)

Primary Interpretive Themes: The following interpretive themes are the most important concepts for visitors to understand about the park:

Joshua Tree National Park is comprised of two biologically different environments, the Mojave and the Colorado Deserts that merge within the park boundaries to create an unusual ecological transition zone. Lush palm oases and springs draw importance to the essential nature of water to a healthy, functioning desert ecosystem.

The Joshua tree, with its unusual shape and adaptation, is a perfect vehicle for

understanding the interdependence of organisms living in the desert.

Plants and animals have evolved to survive in the heat and drought. These adaptations produced an interesting array of life- forms. Humans, from prehistoric times to present, also adapted to an environment with little water. People who have made this area their home adapted and provided a colorful and varied human history.

The picturesque landscape, including mountain ranges, desert basins, and massive rock outcrops, contributes to the park's significance. The dynamic processes that formed the area, including erosion and earthquakes, continue.

Deserts have suffered a great deal of human abuse. The arid landscapes are slow to heal, and tracks made by a single vehicle in the desert soil can often be seen for many years. Fragile desert ecosystems survive in a delicate balance. They quickly manifest even the subtle environmental changes brought about by humans. Protection of the California Desert can only be accomplished from an ecosystem wide perspective that promotes harmonious relationships between people and the environment. The "leave no trace" ethic must be taught to park visitors.

Wilderness is an area of special protection affected primarily by the forces of nature. The imprint of human activities is substantially unnoticeable. People are visitors who do not remain. The park offers the opportunity for visitors to experience nearly 600,000 acres in one of the largest wilderness areas remaining in southern California.

Draft Desert Queen Ranch Management Plan (McCutchen 2001): This report summarizes those reports and inventories previous to it, including the NPS 2004 report in some detail.

APPENDIX 2
Keys Ranch List of Classified Structures
(listed on the National Register of Historic Places)

Structure #	LCS #	Name
HSO1A	005575	Keys Ranch Main House
HSO1B	005576	Keys Ranch Storehouse
HSO1C	005577	Keys Ranch Shed
HSO1D	005578	Keys Ranch Girl's Outhouse
HSO1E	005579	Keys Ranch Men's Outhouse
HSO1F	005580	Keys Ranch Chicken Coop
HSO1G	005581	Keys Ranch Disney Shed
HSO1H	005582	Keys Ranch Tack House
HSO1I	005583	Keys Ranch Guest House
HSO1J	005584	Keys Ranch School House
HSO1L	005586	Keys Ranch Arrastra
HSO1M	005587	Keys Ranch West House Ruins (McHaney House)
HSO1O	005588	Keys Ranch Machine Shed
HSO1P	005589	Keys Ranch Ore (Adobe) Hopper
HSO1Q	005590	Keys Ranch Water Tower
HSO1R	005591	Keys Ranch Windmill
HSO1S	008215	Keys Ranch Adobe Fireplace Ruin
HSO1T	005592	Keys Ranch South House (Bunkhouse)
HSO1V	005593	Keys Ranch Dam SE of Ranch House (Largest)
HSO1W	005594	Keys Ranch North House (School Teacher's House)
HSO1X	005595	Keys Ranch Dam Behind North House
HSO1Y	005596	Keys Ranch North House Double Outhouse
HSO1Z	005597	Keys Ranch North House Single Outhouse
HSO1AA	005598	Keys Ranch Arched Dam (North of School Teacher's House)
HSO1BB	056330	Keys Ranch Cave Shelter
HSO1CC	005599	Keys Ranch Huntington Mill (Amalgamator)
HSO1FF	005600	Keys Ranch Joshua Tree Fence
HSO1GG	005601	Keys Ranch Retaining Wall
HSO1HH	058507	Keys Ranch Joshua Tree Sculpture
HSO1II	058509	Keys Ranch Well at Main House
HSO1JJ	058510	Keys Ranch Crane
HSO1KK	058511	Adobe Pit and Winch (former name: Clay Pit Between Water Tower and Hopper)
HSO1MM	056043*	Keys Ranch Chilean Mill Ruin (1917)
HSO1NN	056044*	Keys Ranch 5-Stamp Mill Ruin (1917)
HSO1OO	056047*	Keys Ranch Roads and Trails (1910-1930)
	009466	Barker Dam
	009468	Barker Dam Catchment Basin
	009469	Barker Dam Stone Stock Watering Trough
	009467	Barker Dam Wooden Watering Trough
	005605	Cow Camp Chimney
	005604	Cow Camp Dam
	274577*	Cow Camp Rock Alignment (1870-1920)
	274658*	Cow Camp Small Dam (1870-1920)
	274598*	Cow Camp Stock Watering Trough (1870-1920)
	274600*	Cow Camp Well (1870-1920)

	274607*	Keys Ranch Corral Willow Fence (1914-1950)
	056049*	Keys Ranch Irrigation System (1915-1950)
	274638*	Keys Ranch One Stamp Mill (1914-1943)

* Added in 2004 as part of SHPO concurrence on CLI

The California SHPO also concurred that the following structures were not contributing to the Keys Ranch Historic District

- LCS 058506 Worth Bagley Stone
- Barker Dam Visitor Trail
- Loop road, Parking and Trail to Comfort Station
- Road, Parking Lot and Trail to Barker Dam
- Caretaker Recreational Vehicle
- Comfort Station (Vault Toilet)
- Maintenance Shed
- Visitor Parking Lot
- Rock Piles (grave) in front of South School House

APPENDIX 3
Timeline 1870 - 2005

Date	Activities
1870	Oliver Smith introduced Texas Longhorns in vicinity of Quail Springs (Chappell, Cox and Kelly 1974).
1876	Oliver Smith leaves area (Chappell, Cox and Kelly 1974).
1879	William and James McHaney settled and started running cattle (more Texas Longhorns) into the region/area (driving them up the Santa Ana River and down Mission Creek, arriving at the Oasis of Mara (Twentynine Palms) and the area later known as Desert Queen Ranch (Chappell, Cox and Kelly 1974). Charles Martin shot and killed Frank James William McHaney acquired mine site (JOTR). William Keys was born George Barth in either Palisade, Nebraska or Russia (Greene 1983).
c. 1893	George Barth changes his name to William Key (Greene 1983)
c. 1894	Construction of adobe barn, bunkhouse and cookhouse at the ranch site (likely by Bill McHaney) (Chappell, Cox and Kelly 1974). McHaney brothers began developing mining operations at Desert Queen Mine. William Keys leaves home at 15 never to see his family again (Chappell, Cox and Kelly 1974).
1894	Bill McHaney sold cattle interest to George Meyers but apparently maintained ownership of the ranch homestead (Chappell, Cox and Kelly 1974). George Meyers built dam in place before Barker Dam (JOTR). Five Stamp mill constructed to process Desert Queen Mine ore.
1898	Keys moved to Phoenix, Arizona and worked on C.W. Wimmel cattle ranch one summer, then to Prescott, then to Jerome, where he worked for two years (Chappell, Cox and Kelly 1974).
c. 1900	Keys moved to Needles, California where he worked as a cowhand on George Briggs' cattle ranch (Chappell, Cox and Kelly 1974).
1901-1902	Keys worked for Conrad-Knight cattle company near Kingman Arizona and served as deputy sheriff for Mojave County Sheriff Henry Loven. When Knight sold his interest in the cattle ranch, Keys hired out at the Gold Roads Mine near Kingman (Chappell, Cox and Kelly 1974).
c. 1902	Keys and five men cross Colorado at Sheep Trail Mill above Fort Mojave, prospecting the area around Piute Springs and Manvel (Barnwell) and develops small silver mill at Piute Springs. Hires out at Manvel to the Keystone Mine – there met Walter Scott (Death Valley Scotty) who was headed to Death Valley (Chappell, Cox and Kelly 1974).
c. 1903	After one year at Keystone, Keys and Matt Amos develop a marginal gold mine near Soda Lake called Gold World (Chappell, Cox and Kelly 1974).
c. 1904	Keys starts off as lone prospector in Funeral Mountains near Timbowa Springs, locates 12 claims (including Desert Hound, Horseshoe, Gold Bug, Tally-ho). Walter Scott camps at Timbowa Springs and renews his acquaintance with Keys.
1906	Scotty and Keys likely show Desert Hound mine to wealthy investors from New York and decide to stage fake hold-up to scare backers off from visiting the mine, while at the same time whetting their appetite to see the mine which someone was supposedly trying to keep them from reaching. Keys (whom Scotty passed off as a half-Indian guide) went with Panamint Indian (Bob Belt) and Shorty Smith to stage the ambush. (See story in Chappell, Cox and Kelly 1974).
c. 1905 - 1907	Keys sells Desert Hound mine to Boston investors (including T.C. DuPont).
c. 1907	Keys Gold Mining Company organized by Boston investors with $40,000 for development. Keys travels to Boston is wined and dined and visits the Massachusetts State House, Longfellow's home and Harvard (Chappell, Cox and Kelly 1974).

1907	Fall. Keys moves from Lucky Baldwin's place in Los Angeles to Goldfield, Nevada. Keys becomes friends with Death Valley Scotty again.
1908	Keys outfitted China Ranch on Amargosa River near Tacopa Hot Springs and set out on another prospecting expedition to Redrock Canyon Placer Mining District. Keys struck small rich claim then set out on tour of California and Nevada, visiting Madera, Stockton, Sacramento, Grass Valley, Nevada City, Weber Lake, Hobart Mills, Reno, Virginia City, Carson City, Bodie, Yerington, Shurz, Bishop and the Owens Valley (Chappell, Cox and Kelly 1974).
1910	Keys moved to Surprise Springs and started prospecting the north end of the Bullion Mountains, north of Twentynine Palms (Chappell, Cox and Kelly 1974).
1911	"Cowboy Joe" Reynolds hires Bill Keys to assist with spring roundup. During the roundup, they camped at Twentynine Palms and Keys hiked many time eight miles to the Desert Queen Mine to talk with the Watchman, Ferguson (Chappell, Cox and Kelly 1974). When the roundup was over Bill Keys had enough money to lease the Crown Prince Mine from Joe Reynolds and continue to work as a cowhand for Reynolds to meet expenses. Keys milled gold ore from Crown Prince (valued at $190/ton) at the Bryant Roller Mill in Twentynine Palms (Chappell, Cox and Kelly 1974). Keys hauls ore for Roach, operator of the Desert Queen Mine (owned by William Morgan of Pasadena). Roach gives up mining the Desert Queen and moves to Los Angeles. Bill Keys becomes watchman. Bill Keys leases and operates the Tully Mine.
1913	Bill Keys or Bill McHaney apparently become friends and likely begin to construct the main ranch house (from scratch or using existing structure) with stone chimney (built by Ray Bolster) at Desert Queen. Bill Keys meets Francis Mae Lawton at Desert Queen Ranch (JOTR).
1914	Bill Keys creates a reservoir north of house by erecting a system of earthen dams across natural washes and ravines. Keys' also develops several springs, watering holes, wells. Keys planted orchard with a variety of fruit trees. North half of NE quarter of Section 4, including Barker Dam withdrawn as Public Reserve No. 14.
1916	Bill McHaney vacates ownership of homestead and Bill Keys files on it (80 acres in Section 32, T1S, R8E). McHaney continues to live at Desert Queen. Bill Keys operates Chilean rotary mill at the millsite near his house. Processes his ore and ore brought in by other prospectors who did not own their own milling equipment.
c. 1916	William Morgan dies.
1917	Bill Keys becomes owner of Desert Queen mine after death of William Morgan, subsequently creating a small stamp mill and Chilean mill on the ranch. Acting watchman Bill Keys files a stock raising homestead which included the Cow Camp Area and starts raising cattle. Ranch now includes 160 acres Keys' begins to raise cattle, plant an orchard and raise oats, barley, corn and vegetables. House completed (fire place date 1917) (JOTR). Bill McHaney dies and gives homestead to Keys (JOTR).

	Frances Lawton's mother gives homestead to Keys (JOTR).
1918	October 8. William Key (age 39) marries 31-year-old Frances Mae Lawton, a telegrapher from Los Angeles.
c. 1918	William Key adds "s" and becomes William Keys (Greene 1983).
1919	September. First of seven children born to Keys and Lawton. Keys expands ranch from 80-240 acres. Keys issued a patent for part of Section 32 (80 acres). Frances Keys gives birth to first son, William F. Key, Jr. who dies five days after birth. Keys establishes cemetery.
1920	Keys planted garden with corn, tomatoes, beans, squash, turnips, beets, carrots, cucumbers, melons, peanuts, kale, lettuce, dill, asparagus (Greene 1983). Food mostly consumed by Keys' at Ranch. Keys also has fields of oats, barley, and alfalfa (JOTR) Orchard contained peaches, pears, apricots, almonds.
1920s	Keys' oldest child ready for school. Keys' hires schoolteacher (Orin Booth) (uses two cabins as schoolrooms) and housed him in shack on Desert Queen Ranch. First students Keys' son Willis and daughter Virginia. Leila Carlson Perkins second schoolteacher. Keys experiments with raising Angora goats.
1921	January. Willis Keys born.
c. 1928-29	Two stamp mill "Wall Street" erected and intermittently operates it until the 1960s. Ore from Desert Queen Mine milled there (Chappell, Cox and Kelly 1974). The Wall Street Mill was originally at Pinyon Well.
1920-1930	Keys builds fences around some land and watering holes. Keys rents cabins to WWI Veterans. Frances Keys teaching Willis and Virginia.
1930	July 8. Keys purchases Wall Street mill (from Orin Booth) (JOTR). San Bernardino County declares Keys' Ranch school an emergency school and provides teachers (Dela and Howard Dudley, who had retired after 30 years in Burma). Key's builds house for them near second dam (Chappell, Cox and Kelly 1974).
1932	Keys located the Big Chief Millsite claim that included Barker Dam. Barker Dam is willed to Bill Keys by Bill McHaney.
1930s	Keys continues prospecting, mining and running cattle. Frances sells vegetables and fruit at Yucca Valley store. Keys begins hiring of several school teachers. Front earthen dam washed away. Keys begins to dredge to build front dam (JOTR).
1936	Joshua Tree National Monument established. Keys found tin (placer) mine in Santa Maria Mountains (between Rice and Blythe) which also contained gold (Chappell, Cox and Kelly 1974).
Late 1930s	Former Los Angeles deputy sheriff Worth Bagley, forced into retirement for alleged brutality to prisoners, settles near Keys. Begins to harass Keys by stealing or killing Keys' cattle, shooting at Keys. Would lie in wait along shared road and ambush Keys. (Chappell, Cox and Kelly 1974)
1937	Ellsworth Keys dies (10 years old) (JOTR).
1940	Bagley moves to desert near keys. Hired by cattlemen.
1930-1940	Keys' builds guest cabins to house relatives, acquaintances and tourists.

1930-1958	Keys' raised and reinforced dams at Ranch with concrete to increase the storage of water from seepage and rainfall.
1942	Keys' Ranch School closed.
1943	May 11. Bagley lies in wait for Keys and shoots at him, hitting Keys' car. Keys shoots back fatally wounding Bagley. Keys' turns himself in at Twentynine Palms and is tried in Riverside County for murder (Chappell, Cox and Kelly 1974). It is the prosecutor's second encounter with Bill Keys. In the first Keys confessed to claim jumping and drew gun first but was exonerated in trial (JOTR). August. Keys convicted of manslaughter. Sentenced to 1-10 years imprisonment at San Quentin. Keys' repeatedly declines offers of parole unless exonerated of crime for self-defense (Chappell, Cox and Kelly 1974).
1943	Francis Keys sells cattle to pay defense costs for trial (Chappell, Cox and Kelly 1974). The Ranch is left unattended, with the house broken into several times (JOTR).
1944	Keys had acquired over 800 acres in Riverside and San Bernardino counties by this time.
1947	Frances makes contact with (JOTR) and Keys' meets Earl Stanley Gardner, author of Perry Mason detective novels (Dell Kiler). Gardner, through Argosy Magazines *Court of Last Resort*, undertakes Keys' efforts to obtain a pardon. Gardner continues in this effort until 1956 when his pardon was delivered (Chappell, Cox and Kelly 1974).
1948	July 19. Bagley's ex-wife interviewed by State Assemblyman Vernon Kilpatrick at Eagle Rock. Near the same time, Keys' friends learn of Bagley's wife's divorce complaint which alleged that Bagley intended to kill Keys (Chappell, Cox and Kelly 1974). October. After 4 years, 7 months in prison, Keys accepts parole and returns to Desert Queen. Keys' goes to work raising the dams, increasing the size of his reservoirs, cultivating his trees and investing in other enterprises to begin again (Chappell, Cox and Kelly 1974). Worked for National Park Service "walked in front of a grader from Keys West Gate to Joshua Tree to establish new existing roadway to west entrance" (Rod Smith, son of Paul Smith worked with Bill Keys) (JOTR).
1950-1960	Keys' built two more dams behind his house, increased his orchard and green areas, and raised the wall of Barker Dam (Chappell, Cox and Kelly 1974).
1959-1960	Disney films "Chico the Misunderstood Coyote" and "Wild Burro of the West" filmed at Ranch. Bill Keys played a miner and the owner of a chicken ranch. Paid for use of Ranch Property and acting.
1956	July 12. California Adult Authority recommends that Keys' application for pardon be granted in view of Keys "adjustment during the past eight years, his age and the added fact that he has a worthy motive in desiring again to vote as a citizen and to reestablish his family's name in society" rather than because of his claim of innocence (Chappell, Cox and Kelly 1974). July 26. California Governor Goodwin J. Knight grants Keys' pardon.
1963	Bill Keys dismantles Chilean mill (Chappell, Cox and Kelly 1974). January 9. Frances Lawton Keys dies and is first buried in Twentynine Palms (Keys is too sick to protest). She is later re-interred in a plot on the ranch alongside her three sons that died. Keys built her headstone of inlaid turquoise (Chappell, Cox and Kelly 1974). Ranch becomes a favorite camp and picnic spot for Boy Scouts and other youth groups (Chappell, Cox and Kelly 1974).
1964	Fall. Bill Keys sells the 240-acre Desert Queen Ranch to Henry E. Tubman of Los Angeles for a reported sum in excess of $131,000 but retains the right to life tenancy on the ranch and adjoining orchard (Chappell, Cox and Kelly 1974). Tubman planned an RV Resort (JOTR).

1966	Tubman trades Desert Queen Ranch to National Park Service for other federal properties (Jack Murphy Stadium land near Miramar Naval Air Station/Scripps Ranch). Bill Keys issued a special use permit by the National Park Service to live out his remaining years on the property.
1967	Town of Joshua Tree honored Keys by making him Grand Marshall of the Turtle Races Parade (Chappell, Cox and Kelly 1974). Keys staying on the ranch several days at a time. NPS park ranger, James Lynch recommends warehousing valuable materials, providing a resident caretaker and only allowing public access via permission of the superintendent. Keys approaches NPS about purchasing his remaining mining claims and personal ranch property, suggesting that the remaining house furnishings, ranch and mining equipment would be of historical value if retained with the ranch. Acquisition proposal was forwarded to the NPS Director for consideration by the National Park Foundation, but not acted upon. September. Walt Holland and John Wise (National Park Service) inventoried and photographed ranch equipment and buildings. (Photographs show that livestock had been removed by this time.)
c. 1967	Articles published on Keys: L. Burr Beldon: *San Bernardino Sun-Telegram* Daughter: Morongo Valley *Desert Journal* Another Daughter: *Roundhound's Journal* Others: Articles in *Desert Magazine* and others
1969	June 29. Bill Keys dies just two months short of his 90th birthday and is buried at Desert Queen Ranch cemetery near Frances and their three sons. Funeral service broadcast on local radio station (JOTR). Joshua Tree receives $15,000 donation from Warner Bros-Seven Arts, Inc. which is later earmarked for the purchase of the Keys' Ranch estate.
1971 [also 1974]	Outlying mining claims, ranch equipment and other ranch property valued and purchased by National Park Service from Keys' estate. Seasonal NPS caretaking and fence maintenance established.
1972	First major effort by NPS to inventory and assess objects and structures at the newly acquired ranch. Management alternatives for site development also evaluated.
1973-1974	Maintenance shed constructed with materials salvaged from Lucky Boy Mine.
1974	Gordon Chappell, Regional Historian, Robert Cox, Regional Historical Architect, and Roger Kelly, Regional Archeologist, conduct Historic Preservation Study and photo-document each of 27 buildings and structures. Make various recommendations, including paradoxical one that if the structures were stabilized, they would be more substantial than when Keys constructed them. Keys Ranch declared a Point of Historical Interest by San Bernardino County.
1975	Joshua Tree Chief Naturalist Don Black disagrees with Chappell *et al.* and recommends that the ranch be viewed as a museum exhibit and preserved through stabilization. Patricia Hunter (later Hickman) of the University of Pennsylvania Department of Anthropology also disagrees with Chappell *et al.* and writes that the entire area is a treasure trove of anthropological research material and should be significant at the regional level and should further be researched in depth and "everything" be catalogued. Hunter also notes that the ranch should have been looked at in a more "holistic, anthropological, historical and architectural way." NPS Conservation Specialist Betsy Hunter assesses ranch materials noting that curatorial problems were immense – due to thousands of small items, such as car parts, mining machinery parts, bolts, nails, hardware, fencing materials, mining and ranch tools, etc. B.

	Hunter initiates formal museum cataloging, determining what should remain or be released depending on value and historical importance. Keys Ranch and surrounding 160 acres nominated and listed on National Register of Historic Places (Cow Camp, October 29, 1975; Barker Dam, October 29, 1975); and Keys', Bill, Ranch (October 30, 1975). Thirty-four ranch buildings and structures placed on List of Classified Structures.
1976	Park requested and received permission from California State Historic Preservation Officer to use Keys Ranch site as part of bicentennial celebration in the park and to begin conducting guided tours. Park continues guided tours of the ranch. Team of specialists from Harper's Ferry National Preservation Center and Western Region undertake 1) selecting the objects for cataloging and 2) recording and storing them. 158 objects selected and removed for museum storage and 22 larger objects selected to remain in place. Team noted that most of the important items had been removed by Keys' Ranch family members and others, but that the collection was still rich in artifacts of the mining industry and in agricultural tools and implements. Team recommended that paper records (magazines, catalogs, letters, photographs, newspapers, etc.) be archived later. September. Western Archeological and Conservation Center (WACC) staff Jim Hewitt and Crick Curriden conducted document survey of Keys' Ranch papers. Although the materials had been displaced and had rodent damage, 90 percent were salvaged, with 2,700 items recorded and photographed. Fall. High winds accompanied by torrential rains blew the roof off the adobe ranch. The roof was replaced and weighted down. Patricia Parker Hickman (Hunter?) submitted report on ranch through contract with WACC. Hickman noted that while "there may be other sites in and around the California desert which could duplicate the data categories at Keys' Ranch. . .At the moment, Keys' Ranch is the only such site on record (the National Register), the only one under federal ownership, and the only one that has been maintained intact for study."
1977	Tack shed items treated and general clean-up conducted. Some weakened structures stabilized.
1978	Park conducts housekeeping cleanup of ranch, including clearing fire hazard brush, stabilizing the adobe hopper, repairing and operating the windmill, and fixing the irrigation system to water the orchard. G. Colonack and Ken Nevin of WACC visit and make suggestions for stabilization. Dave Forgang (WRO Curator) inspects site.
1980s	Benign neglect. Ranger residence in onsite trailer. Hazardous materials removed from bottles in storage.
1983	Historic Resource Study: A History of Land Use in Joshua Tree National Monument (Greene 1983) concurs with 1974 recommendations to conduct only minor stabilization and repairs and eventually allow buildings to fail (benign neglect). Report challenged Hunter-Hickman (1976) "regional significance" assessment.
1989	Photo documentation of ranch conditions. Through 1990. Loop road around the visitor parking area constructed.
Early 1990s	Ranch in deteriorated condition. Roof blown off adobe barn, structure collapses, only one section standing. McHaney cabin collapsed. Other structures on verge of collapse. Damage from wind, termites, water, rodents, overgrown. Volunteer caretakers, Harmon and Nelda King arrive. Start as part time, part year residents, later full-time residents. Conduct maintenance, patrols, irrigate vegetation, conduct weekend

	tours.
nd	640+ acres formally closed to the public by superintendent. Installation of gate at fenceline.
1991	Collections Management Plan
1992	Regional Historian, Hank Florence recommends short and long-term preservation strategies for six buildings. Determines buildings as a group possess significance as cultural landscape. NPS Downstream Hazard Report concludes that if dams should fail, they would result in "lives-in-jeopardy."
1992-1994	Park conducts stabilization and clean-up. Brush clearing to reduce fire hazard, garden plowed, dead trees adjacent to house and orchard removed, clutter removed, windrow spare parts yard, standing equipment repaired, fences and retaining walls restored, windmill and irrigation system repaired, benches restored, roofs replaced. Main House, South House, School House, Machine Shed, Adobe Hopper, North House structurally stabilized.
1993	Historic American Buildings Survey (HABS project CA-2347). Scaled drawings and photographs completed and archived.
1995	Decision to replant orchard south of Main House (only 3 original trees remained). Keys family members developed map of location, species and specific variety of fruit.
1995-1997	Main House Orchard replanted (15 saplings). Public allowed to purchase fruit trees in honor or memory of somebody (JOTR).
1997-1998	Archeological survey/dig conducted by Claude Warren (UNLV) and Joan Snyder (UCR) of ranch grounds and adjacent area. Considerable history found at 12-18 inches below the surface indicating a history of Native American use dating hundreds of years. Mapping of extent conducted.
1997	Draft Desert Queen Ranch Management Plan (Pepito 1997). Rosie Pepito, Branch Chief Cultural Resources prepared a preliminary draft management plan to integrate historical preservation, archeological preservation, natural resources management, interpretation, maintenance and protection. Transferred with plan still in draft.
1998	Caretakers (Harmon and Nelda King) leave. Park cannot locate caretakers willing to stay year-round due to remote location, lack of electricity and other amenities. Park recognizes need for other than piecemeal, ad hoc management of ranch. Experimental fee demo interpretative program (approved by California SHPO) begins (daily schedule of four tours per day, rather than 2 tours per day on weekends). April. WRO, Historical Architect, Michael Scott visits to survey structures and to develop stabilization recommendations. Produces report. May 21. Draft Management Plan Desert Queen Ranch (Spearing 1999) Spearing report includes photo inventory.
1999	May. Level 2 Cultural Landscape Inventory, Keys Ranch Historic District, Joshua Tree National Park by WRO staff, Kimball Koch, Mark Luellen, and Shaun Provencher (NPS 2005).
2001	H. McCutchen Draft Desert Queen Ranch Management Plan. Santa Fe Historic Preservation Team stabilizes 14 structures (JOTR).
2002	Al Levitan, NPS, Harper's Ferry Center conservator of wooden objects conducts conservation survey.
2003	Al Levitan and Dave Casebolt (San Francisco Maritime) clean and treat the four wagons in the Ranch yard.

	August. Heavy rains close Ranch to Tours (JOTR).
2004	November. Park requests PWRO assistance in reconvening an interdisciplinary team to determine how to manage Keys Ranch. Rain and snow closes ranch to Tours (JOTR).
2005	Dam overflows and structural concerns with it close Ranch to Tours for a few weeks (JOTR). April. Planning Charette for Keys Ranch at JOTR, facilitated by PWRO.

Note: According to Chappell, Cox and King (1974) from which much of the foregoing timeline is taken "Published and unpublished material containing information regarding the life of William F. Keys is full of contradictions. Unfortunately, no historian sought to iron out these discrepancies prior to Keys' death. It may still be possible to resolve some of the conflicts through interviews with Keys' descendants and other old- time residents of the Twentynine Palms area. Some answers may be found in an examination of federal, state, county and local records of land ownership, homesteads, mining claims, mill site claims, reservoir claims, etc. Still other material may be found in a thorough search of local libraries, historical societies and museums throughout southern California. The foregoing account is based on the most readily available material and represents an effort of the Regional Historian to negotiate a safe path through the minefields of contradictions. Unquestionably, further research into historical resources of a more primary nature will illuminate many errors and oversimplifications, and such research is sorely needed to resolve the contradictions before they become even more entrenched in the record and before possible means of solution vanish with the death of other old- timers."

APPENDIX 4

Public Comment Form

National Park Service
U.S. Department of the Interior

Joshua Tree National Park
77485 National Park Drive
Twentynine Palms, CA 92277

Keys Ranch Public Scoping

Welcome to Joshua Tree National Park's public scoping meeting. Through this process, the National Park Service (NPS) is developing a comprehensive management plan for Keys Ranch and associated management areas.

Vision:

> *Keys Ranch is preserved and is an integral park of the Joshua Tree National Park experience. Visitors depart with a better understanding of human adaptation to the desert, area history, and an appreciation for those who pioneered the desert living experience. Visitors also understand the ranch within the context of the California Desert and the National Park Service.*

Process:
1. Park identifies site opportunities and constraints
2. Public comments and involvement
3. NPS prepares draft plan and Environmental Analysis for internal review
4. NPS issues the Environmental Assessment for 30- day public review
5. Final plan

Significance:

Keys Ranch and its associated structure provide silent testament to the ability of some self- reliant late 19th and early 20th century homesteaders to adapt and thrive in the harsh Mojave Desert environment. The ranch exhibits the full range of desert homesteading activities and stories, including raising a family, ranching, mining, farming and retaining the water needed to make it all possible.

The Keys Ranch Historic District retains a high degree of each of the seven aspects, or qualities, that define integrity according to National Register standards – location, design, setting, materials, workmanship, feeling and association.

****

Please use the remaining space for your comments and suggestions. Thank you for your participation.

_____ Your name
_____Address
_____City, State, Zip
Yes _____ No _____ I would like to participate in the final public comment phase?

(second page had self-addressed area – some with postage – and space for comments)

APPENDIX 5
Secretary of the Interior's Standards

Secretary of the Interior's Standards for Preservation

Preservation *is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code- required work to make properties functional is appropriate within a preservation project.*

1. A property will be used as it was historically or given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.

2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration or features, spaces, and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. The existing condition of historic feature will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration necessitates repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color and texture.

7. Chemical or physical treatment s, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

Secretary of the Interior's Standards for Rehabilitation

Rehabilitation *is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural or architectural values.*

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

4. Changes to a property that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and where possible, materials. Replacement of missing features will be substantiated by physical and documentary evidence.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Secretary of the Interior's Standards for Restoration

Restoration *is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.*

1. A property will be used as it was historically or be given a new use which reflects the property's restoration period.

2. Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period will not be undertaken.

3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

4. Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.

6. Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials.

7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.

8. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

9. Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

10. Designs that were never executed historically will not be constructed.

Secretary of the Interior's Standards for Reconstruction

Reconstruction *is defined as the act or process of depicting, by means of new construction, the form, features, and detailing of a non- surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.*

1. Reconstruction will be used to depict vanished or non- surviving portions of a property when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture, and such reconstruction is essential to the public understanding of the property.

2. Reconstruction of a landscape, building, structure, or object in its historic location will be preceded by a thorough archeological investigation to identify and evaluate those features and artifacts which are essential to an accurate reconstruction. If such resources must be disturbed, mitigation measures will be undertaken.

3. Reconstruction will include measures to preserve any remaining historic materials, features, and spatial relationships.

4. Reconstruction will be based on the accurate duplication of historic features and elements substantiated by documentary or physical evidence rather than on conjectural designs or the availability of different features from other historic properties. A reconstructed property will re-create the appearance of the non- surviving historic property in materials, design, color, and texture.

5. A reconstruction will be clearly identified as a contemporary re- creation.

6. Designs that were never executed historically will not be constructed.

APPENDIX 6
Keys Ranch Plant List

GENUS SPECIES	COMMON NAME	NATIVITY
Lotus nuttallianus	Lotus	Native
Polypogon monspeliensis	beard grass	Nonnative
Populus nigra	Lombardy poplar	Invasive
Bromus alopecuros	unknown	Nonnative
Bromus hordeaceus	unknown	Nonnative
Acacia greggii	cat's claw	Native
Acamptopappus sphaerocephalus	goldenhead	Native
Achnatherum hymenoides	Indian rice grass	Native
Achnatherum speciosum	desert needlegrass	Native
Adenophyllum porophylloides	adenophyllum	Native
Allium atrorubens cristatum	onion	Native
Allium denticulatum	onion	Native
Amaranthus albus	tumbleweed	Nonnative
Amaranthus sp.	unknown	
Amsinckia tessellata var. tesselata	devil's lettuce	Native
Amsonia tomentosa	amsonia	Native
Anisocoma acaulis	anisocoma	Native
Arabis perennans	rock-cress	Native
Arctostaphylos glauca	manzanita	Native
Aristida purpurea	three-awn	Native
Artemisia dracunculus	tarragon	Native
Artemisia ludoviciana	silver wormwood	Native
Arundo donax	giant reed	Invasive
Astragalus coccineus	scarlet milkvetch	Native
Astragalus lentiginosus variabilis	freckled milkvetch	Native
Astragalus palmeri	milkvetch	Native
Atriplex canescens ssp. cansescens	four-wing saltbush, shad-scale	Native
Avena fatua	wild oat	Invasive
Baccharis sarothroides	broom baccharis	Native
Baccharis sergiloides	desert baccharis, waterweed	Native
Baileya pleniradiata	desert marigold	Native
Boerhavia sp.	spiderling	Native
Bouteloua curtipendula	side-oats grama	Native
Brickellia arguta	bricklebush	Native
Brickellia californica	bricklebush	Native
Bromus diandrus	ripgut grass	Nonnative
Bromus madritensis ssp. rubens	foxtail chess	Invasive
Bromus tectorum	cheat grass, downy brome	Invasive
Bromus trinii	Chilean grass	Invasive
Calochortus kennedyi var. kennedyi	mariposa lily	Native
Calochortus striatus	alkali mariposa lily	Native
Camissoniapa llida pallida	sun cup	Native
Castilleja angustifolia	desert indian paintbrush	Native
Caulanthus cooperi	jewelflower	Native
Chaenactis spp.	pincushion	Native
Chamaesyce albomarginata	prostrate spurge	Native
Chamaesyce revoluta	prostrate spurge	Native
Chilopsis linearis ssp. arcuata	desert willow	Native
Chilopsis linearis	desert willow	Native
Chorizanthe brevicornu	brittle spineflower	Native

Chrysothamnus nauseosus	rubber rabbitbush	Native
Chrysothamnus spp.	rabbitbush	Native
Cirsium neomexicanum	desert thistle	Native
Coleogyne ramosissima	blackbrush	Native
Conyza canadensis	horseweed	Native
Croton californicus	croton	Native
Cryptantha micrantha	crypthantha	Native
Cryptantha sp.	crypthantha	Native
Datura wrightii	jimson weed, thornapple	Native
Delphinium parishii	desert larkspur	Native
Dichelostemma capitatum pauciflorum	blue dicks	Native
Distichlis spicata	saltgrass	Native
Dudleya saxosa	dudleya	Native
Echinocereus engelmannii	hedgehog cactus	Native
Echinocereus triglochidiatus	hedgehog cactus	Native
Emmenanthe penduliflora	whispering bells	Native
Encelia actoni	encelia	Native
Ephedra nevadensis	Mormon tea	Native
Eragrostis cilianensis	stinkgrass	Nonnative
Eriastrum diffusum	eriastrum	Native
Ericameria cooperi	goldenbush	Native
Ericameria cuneata	goldenbush	Native
Ericameria laricifolia	turpentine bush	Native
Erigeron breweri covillei	fleabane dainsy	Native
Erigeron divergens	fleabane dainsy	Native
Eriodictyon trichocalyx trichocalyx	yerba santa	Native
Eriogonum davidsonii	buckwheat	Native
Eriogonum fasciculatum	California buckwheat	Native
Eriogonum inflatum	desert trumper	Native
Eriogonum maculatum	buckwheat	Native
Eriogonum pusillum	buckwheat	Native
Erioneuron pulchellum	fluff grass	Native
Eriophyllum wallacei	eriophyllum	Native
Erodium cicutarium	storksbill, filaree	Invasive
Eschscholzia minutiflora	escscholzia	Native
Eucrypta micrantha	eucrypta	Native
Ferocactus cylindraceus	barrel cactus	Native
Fraxinus velutina	velvet ash	Native
Galium aparine	goose grass	Native
Gilia sp.	gilia	Native
Glycyrrhiza lepidota	wild licorice	Native
Gnaphalium luteo-album	cudweed	Nonnative
Gnaphalium palustre	cudweed	Nonnative
Gutierrezia microcephala	sticky snakeweed	Native
Heterotheca sp.	golden aster	Native
Hymenoclea salsola salsola	cheesebush	Native
Juncus macrophyllus	rush	Native
Krameria erecta	pima rhatany, purple heather	Native
Lactuca serriola	prickly or wild lettuce	Invasive
Larrea tridentata	creosote	Native
Layiaglandulosa	white layia	Native
Lepidium lasiocarpum	peppergrass	Native
Lepidium virginicum	peppergrass	Native
Linanthus aureus aureus	linanthus	Native
Loeseliastrum matthewsii	desert calico	Native

Lomatium mohavense	lomatium	Native
Lotus purshianus	lotus	Native
Lotus rigidus	lotus	Native
Lupinus concinnus	bajada lupine	Native
Lupinus formosus	lupine	Native
Lupinus shockleyi	desert lupine	Native
Lycium andersonii	boxthorn	Native
Lycium cooperi	boxthorn	Native
Malacothrix coulteri	snakes' head	Native
Malacothrix glabrata	desert dandelion	Native
Malus sp.	Whitney crabapple	Nonnative
Malus pumila	Jonathan apple	Nonnative
Malus pumila	Baldwin apple	Nonnative
Malus pumila	Gravenstein	Nonnative
Mammillaria tetrancistra	nipple cactus, fish-hook cactus	Native
Marsilea vestita vestita	marsilea	Native
Medicago polymorpha	California burclover	Nonnative
Melica imperfecta	onion grass	Native
Melilotus indica	sourclover	Nonnative
Menodora scoparia	menodora	Native
Mentzelia albicaulis	blazing star	Native
Mimulus aurantiacus	monkeyflower	Native
Mimulus guttatus	monkeyflower	Native
Mimulus pilosus	monkeyflower	Native
Mirabilis bigelovii bigelovii	four o' clock	Native
Muhlenbergia appressa	muhly	Native
Nama demissum	purple mat	Native
Nemacladus sigmoideus	nemacladus	Native
Nicolletia occidentalis	nicolettia	Native
Nolina parryi	Parry's nolina	N Native ative
Opuntia basilaris	beavertail cactus	Native
Opuntia chlorotica	pancake prickly pear	Native
Opuntia echinocarpa	silver or golden cholla	Native
Opuntia phaeacantha	opuntia	Native
Perityle emoryi	perityle	Native
Phacelia campanularia	phacelia	Native
Phacelia cryptantha	phacelia	Native
Phacelia fremontii	phacelia	Native
Phacelia pedicellata	phacelia	Native
Phacelia tanacetifolia	phacelia	Native
Phoradendron californicum	desert mistletoe	Native
Physalis crassifolia	ground-cherry	Native
Pinus monophylla	singleleaf pinyon pine	Native
Plantago ovata	plaintain	Native
Plantago patagonica	plaintain	Native
Pleuraphis rigida	big galleta	Native
Populus fremontii	Fremont cottonwood	Native
Prosopis glandulosa torreyana	honey mesquite	Native
Prunus armeniaca	Royal	Nonnative
Prunus armeniaca	Moorpark apricot	Nonnative
Prunus communis	Barlett pear	Nonnative
Prunus communis	Anjou pear	Nonnative
Prunus communis	Sickle pear	Nonnative
Prunus domestica	Italian Prune	Nonnative
Prunus dulcis	Almond	Nonnative

Prunus fasciculata	desert almond	Native
Prunus persica	Peach	Nonnative
Quercus sp.	oak	Native
Rafinesquia californica	California chicory	Native
Rhus trilobata	skunkbrush	Native
Salazaria mexicana	paperbag bush	Native
Salix gooddingii	Goodding's black willow	Native
Salix lasiolepis	arroyo willow	Native
Salvia columbariae	chia	Native
Schismus sp.	Mediterranean grass	Invasive
Scirpus sp.	Unknown	
Simmondsia chinensis	jojoba	Native
Sisymbrium altissimum	tumble or Jim hill mustard	Invasive
Sisymbrium irio	London rocket	Invasive
Sonchus asper	prickly sow-thistle	Invasive
Sphaeralcea ambigua	apricot mallow	Native
Sporobolus airoides	alkali sacaton	Native
Sporobolus flexuosus	mesa dropseed	Native
Stanleya pinnata	Prince's plume	Native
Stephanomeria exigua	stephanomeria	Native
Stephanomeria pauciflora	wire lettuce	Native
Tamarix ramosissima	tamarisk	Invasive
Tetradymia stenolepis	horsebrush	Native
Trifolium variegatum	clover	Native
Viguiera parishii	viguiera	Native
Xylorhiza tortifolia	Mojave-aster	Native
Yucca brevifolia	Joshua tree	Native
Yucca schidigera	Mojave yucca	Native